AMERICAN FORESTS

JULY 1944

35 CENTS A COPY

U. S. MARINES ON BOUGAINVILLE use palm trees for telephone poles as they string communication lines. Two stand guard with carbine and sub-machine gun.

Telephone Lines on Bougainville

THIS is a war of communications. The farther our forces advance, the more wires, telephones and switchboards they need. And war stopped the making of telephones for civilian use.

We regret that many here at home cannot now get telephone service and may not be able to get it for some time.

If you are one of those who are waiting, we'd like you to know that we will do everything in our power to minimize your delay.

BELL TELEPHONE SYSTEM

AMERICAN FORESTS

VOLUME 50 JULY, 1944 NUMBER 7

Editor-in-Chief
OVID BUTLER

Editor
ERLE KAUFFMAN

Associate Editor
LILIAN CROMELIN

CONTENTS

	Page
CONSERVATION COMMUNIQUES	322
EDITORIAL D-Day and the Forest Wood Magic	327
THE FORESTS OF FRANCE By Georges Bois	328
A STUDIO IN THE REDWOODS By Laura Adams Armer	331
SUPER-WOOD HAS ARRIVED By Harland Manchester	334
FLAG OF TRUCE By John Pratt Whitman	336
THE AMERICAN WILDERNESS By John L. Blackford	338
OUT OF THE ASHES OF NESTUCCA By Thornton T. Munger	342
TREES AGAINST SAND By Sigmund Sameth	346
ADVENTURE WITH RACCOON By Sam Campbell	348
TREE TRAILS By W. D. Porter	352
CANADA'S POSTWAR CONSERVATION PLAN By Clark Dargavel	350
NEW BOOKS AND PUBLICATIONS	360
THE CONSERVATION CALENDAR	361

THE COVER

Wood Goes Ashore—Casing Materiels of War.
(Official U. S. Coast Guard Photo)

The Editors are not responsible for loss or injury of manuscripts and photographs while in their possession or in transit. All manuscripts should be accompanied by return postage. The Editors are not responsible for views expressed in signed articles. Notice of change of address for *American Forests* should be received by the tenth of the month preceding issue. Entered as second-class matter at the Postoffice at Washington, D. C., under the Act of March 3, 1879. Acceptable for mailing at special rate of postage provided in Section 1103, Act of October 3, 1917, authorized July 10, 1918. Additional entry at Baltimore, Md., December 29, 1931.

Copyright, 1944, by The American Forestry Association.

American Forests

Published monthly by

THE
AMERICAN FORESTRY
ASSOCIATION

919 Seventeenth Street
Washington 6, D. C.

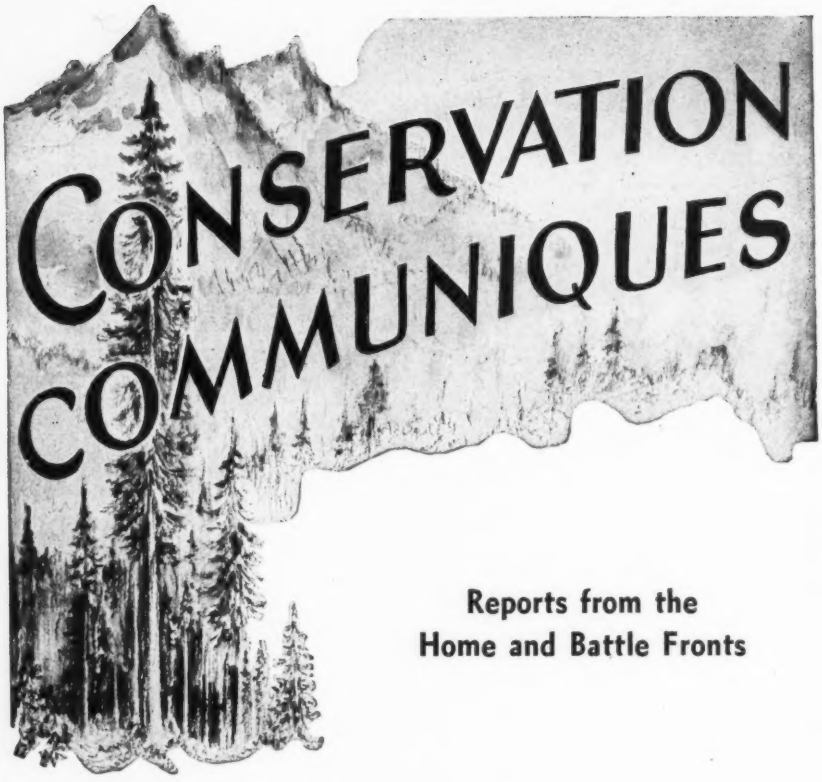
The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational work in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. Its resources and income are devoted to the advancement of conservation in the interests of public welfare, and all citizens are welcomed to membership.

35c A COPY
$4.00 A YEAR



Reports from the Home and Battle Fronts

Lumber requirements for the third quarter of 1944—10,570,000,000 board feet—are estimated by WPB to be 1,500,000,000 feet greater than probable supply. Production for the first quarter amounted to 7,701,602,000 feet, of which 4,433-, 626,000 feet were produced in the East, 3,267,976,000 feet in the West. This is an increase of three percent for the same period of 1943. Total 1944 production figure set by WPB is 35,500,000,000 board feet.

• • • •

In the face of this anticipated shortage, employment in the lumber industry is showing an alarming downward trend, reports the War Manpower Commission. Average employment for the first quarter of 1944 dropped 53,000 below that of 1943. It is still going down. To help meet this critical situation the WMC will import 1,000 logging and lumbering workers from British Honduras.

• • • •

According to one beachhead report, Nazi troops in France are using wooden bullets against American invasion forces. Rangers found 20-millimeter and rifle bullets made of wood among discarded German ammunition. Wooden "shoe mines," used by the Germans at Cassino, are also reported on the French invasion coast. They are made of plywood or plastic enclosing a firing pin and enough TNT to blow off a man's foot. Chief value is that they defy mine-detectors which locate metal buried beneath the surface of the ground.

• • • •

President Getulio Vargas of Brazil recently was presented with the first quinine tablets to be manufactured in that country. The cinchona tree, from which quinine is obtained, was cultivated in Brazil during the nineteenth century but abandoned. In 1938 the U. S. Department of Agriculture presented Brazil with 1,000 seedlings imported from the Far East—and a year later the contribution was repeated. From this stock, Brazil is now manufacturing quinine for the first time.

• • • •

Chungking reports that from ten to twenty-five agricultural and forestry technicians will be sent to the United States for advance studies and practical training. This is said to be part of an agreement between the two countries whereby China is to receive American assistance in developing her vast agricultural and forestry enterprises.

Three hundred forest fires which raged for a week in northwestern Quebec late in May, caused damage estimated at $10,000,000.

• • • •

The Norwegian paper industry is in a critical condition, according to the German-controlled press. A ban on production of 150 items a year ago failed to relieve the situation, so newsprint distribution has been restricted twenty-five per cent of normal consumption. This has resulted in many papers limiting editions to two pages while others have suspended publication. Among these, to add an ironical note, is the Norwegian paper mills' trade journal.

• • • •

Switzerland, on the other hand, is experiencing a reduction in the demand for paper production for the first time since the beginning of the war. The reason for this is not known.

• • • •

Continuous passenger automobile travel between the United States and the Panama Canal Zone will be possible over the Inter-American Highway by late 1947 provided funds are made available for the construction of two incompleted gaps in Central America, totaling around 250 miles.

• • • •

Mexico's production of guayule rubber is expected to attain within a short time an annual rate of 12,000 tons, double the 1940 production rate. At Cuatro Cienegas, a small village in the guayule region, a new processing mill has been established to expedite the rising output for export to the United States.

• • • •

The Forest Service has decided to block out a large pulptimber unit on the Tongass National Forest in southeastern Alaska for investigation by representatives of the pulp and paper industry who may desire to study at this time the postwar economic possibilities for the industry in this new field. The forests of the Tongass are composed almost entirely of pulping species, approximately seventy-five percent hemlock, twenty percent spruce and five percent cedar.

• • • •

"One man, one tree"—is the slogan of a citizens' tree-planting campaign in the Ninghsia province of China, according to the Chinese press.

First-Class Fighting Machine

TALK to a fighting man back from battle and you'll hear him speak of "Caterpillar" Diesel equipment with affection. He knows that, out there, when they need "workpower" they count on "Caterpillar" Diesels. War dramatizes the dependability of these husky power-plants.

It was in the years before the war, on the highways, on construction jobs, in logging camps and oil fields and on farms that "Caterpillar" Diesels matched their strength and willingness to work against the toughest kinds of jobs.

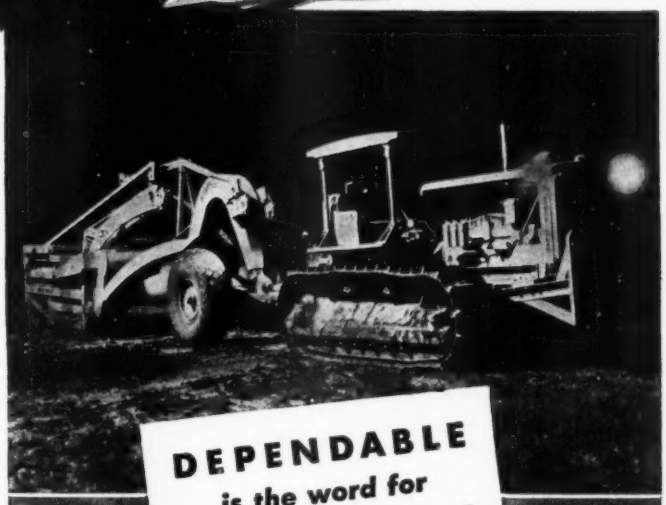
Through those years, the men who built them were watching them perform. Owners of "Caterpillar" equipment were urged to give it more and harder work to do. After many thousands of hours of service, engines were torn down and studied. At the first sign of an on-the-job weakness—no matter how slight—"Caterpillar" trouble-shooters went after it *. . and corrected it!*

So, when the war needs called for dependable power, it was just a question of stepping up production of the same machines which had been proved over so many years.

When the war is done, the biggest production of "Caterpillar" Diesel Tractors, Motor Graders, Engines and Electric Sets in all history will be ready to tackle the countless tasks that peace will bring. They won't be streamlined "dream" models, but they will be modern, battle-tested "Caterpillar" Diesels—the same kind that are with the Allied troops around the world today.

Meanwhile, your "Caterpillar" dealer is equipped to render complete and efficient service to help keep your present "Caterpillar" equipment on the job—working at peak efficiency.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS



DEPENDABLE
is the word for
"Caterpillar" Diesel

CATERPILLAR DIESEL
REG. U.S. PAT. OFF.

TO WIN THE WAR: WORK—FIGHT—BUY U. S. WAR BONDS!

TO KNOW TREES . . .

EVERYONE likes trees. Children swing happily from their boughs; housewives polish beautifully grained wood with deep satisfaction; vacationists sigh in contentment at their very sight; loggers swing axes in the comforting knowledge of security for themselves and their families; the aged sit with mellow memories in their shade.

Everyone likes trees. Yet far too few really know them—know their interesting families and life histories, their characteristics, how each best serves humankind. Unlike our fellowmen, whom we are quick to appraise in the light of background, personal habits and contributions to society, the tree, so long as it is rooted, is too often accepted as a fixture in the landscape, to be enjoyed or ignored as the spirit moves. It is just a tree.

Those who have discovered that trees, like people, are rugged individualists know better. To them the oak, once worshipped by man as a god, is the personification of strength and endurance; the pine, they have found, is a mysterious reservoir of the stuff that makes for a happier, healthier and more prosperous world; the redwood, more than a towering giant, is the symbol of accomplishment and permanence. To know trees is to grow mentally and spiritually, to enrich life by opening the door to new wonders and magnificence.

The American Forestry Association for years has been both biographer and historian of trees. Their colorful stories, presented through the pages of AMERICAN FORESTS and in other ways, have contributed greatly to the knowledge and pleasure of thousands of Americans. Today the life story of more than a hundred of our most important trees, the botanical features of each, its range and habits, as well as its uses and economic importance, is published by the Association in a single volume—KNOWING YOUR TREES, by G. H. Collingwood. One of the outstanding features to this key to greater tree knowledge and appreciation is more than 500 identifying pictures—actual photographs, winter and summer, of each tree, its leaf, bark, flower and fruit. The Association also has issued a separate publication on the trees of the District of Columbia, a helpful guide to anyone visiting the National Capital and its world famous tree-lined streets and parks.

The aristocrats of the tree world—famous and historic trees, and the largest living specimens of many species—are recorded by the Association and are on permanent file at its headquarters at Washington, D. C. The purpose of this record is to help Americans attain a greater appreciation of their tree heritage.

Know your trees! The American Forestry Association will help you.

THE AMERICAN FORESTRY ASSOCIATION

919 SEVENTEENTH STREET, N. W., WASHINGTON 6, D. C.

OFFICERS

President
W. S. ROSECRANS

Executive Secretary
OVID BUTLER

Treasurer
I. J. ROBERTS

Business Manager
FRED E. HORNADAY

Vice-Presidents

Thornhill Broome — Illinois, Izaak Walton League of America.
Victor M. Cutter — New Hampshire, Former Chairman, New England Regional Planning Commission.
J. N. Darling—Iowa, Honorary President, National Wildlife Federation.
Col. Arthur F. Fischer — District of Columbia, Advisor, Natural Resources, Philippine Islands.
Mrs. T. M. Francis—Alabama, Chairman of Conservation, General Federation of Women's Clubs.
Mrs. Luis J. Francke — New York, Chairman, Conservation Committee, The Garden Club of America.
John D. Guthrie—Virginia, American Forest Fire Medal Foundation.
Edmund Hayes — Oregon, Chairman, Keep Oregon Green Association.
Paul G. Hoffman — Indiana, Chairman, Committee for Economic Development.
Augustus S. Houghton—Connecticut, New York State Reforestation Commission.
Don P. Johnston — North Carolina, Manufacturer.
Irving M. Larom — Wyoming, President, Dude Ranchers' Association.
Aldo Leopold — Wisconsin, The Wilderness Society.

Glenn L. Martin — Maryland, President, League of Maryland Sportsmen.
Duncan McDuffie — California, President, Sierra Club.
Julian McGowin — Alabama, Chairman, Advisory Board, Department of Conservation.
James G. K. McClure — North Carolina, President, Farmers Federation.
Mrs. George D. Pratt — New York.
Dr. Henry Schmitz — Minnesota, President, The Society of American Foresters.
Harper Sibley — New York, Sibley Farms.
Lowell Thomas — New York, Radio Commentator and Author.

Board of Directors

Goodwin B. Beach, 1944 — Connecticut, President, Connecticut Forest and Park Association.
Louis Bromfield, 1948—Ohio, Friends of the Land.
Bryce C. Browning, 1947 — Ohio, Secretary, Muskingum Watershed Conservancy District.
Frederick P. Champ, 1946 — Utah, Mortgage Bankers Association of America.
Samuel T. Dana, 1947 — Michigan, Dean, School of Forestry and Conservation, University of Michigan.
Karl T. Frederick, 1946 — New York, Chairman of the Board, New York State Conservation Council.
William B. Greeley, 1948 — Washington, West Coast Lumbermen's Association.
Henry P. Kendall, 1945 — Massachusetts, New England Council.
L. F. Livingston, 1944 — Delaware, American Society of Agricultural Engineers.
Walter H. Meyer, 1948—Connecticut, Yale School of Forestry, Yale University.
Frank E. Mullen, 1946 — New York, National Broadcasting Company.
Randolph G. Pack, 1944 — New York, President, Charles Lathrop Pack Forestry Foundation.
John W. Watzek, Jr., 1945 — Illinois, National Lumber Manufacturers Association.
William P. Wharton, 1947 — Massachusetts, President, National Parks Association.
C. P. Wilber, 1945 — New Jersey, Director of Conservation of New Jersey.

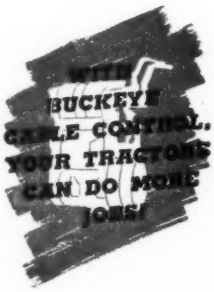
Forest Resource Appraisal

JOHN B. WOODS, Director **JOHN C. REDINGTON, Field Secretary**

"You should have seen those little rats run!"

On fighting fronts all over the world, word has come back of bulldozers in action, not only doing the vital jobs for which they are built, but *fighting* jobs as well. Among the most spectacular of these reports is the following contained in a letter from one of Buckeye's men in service:

"Now here is something I would like to tell you, now that I am back out of New Guinea. We had two pillboxes that were impossible for us to take, so they had a bulldozer about four miles away. We brought it up and by raising the blade charged the boxes. You should have seen those little rats run. We are still laughing. Now let me tell you something—it was a Buckeye blade and a Buckeye winch on the back! Keep up the good work and keep the Japs on the move."



After the war you can count on Cable Controlled Buckeyes to keep *costs* on the run. They've been proved in action — stripped down to fighting trim and built to take a beating. You'll be buying new equipment when it's available again. *Keep your eye on Buckeye!*

BUCKEYE TRACTION DITCHER CO.
Findlay, Ohio

Buckeye

Trenchers
Tractor Equipment
Road Wideners

Convertible Shovels
Spreaders
Power Finegraders

Wood helped secure our beachheads in Normandy—wood in ships, in planes, in trucks and tanks, in millions of crates and boxes that delivered weapons and supplies to our fighting men—the most superbly equipped in the world

Editorial

D-DAY AND THE FOREST

JUNE 6, 1944—the D-Day that resounded around the world—will go down the long trail of time as a day of heroic achievement. Not that the storming of the Normandy Coast by the fighting legions of free people has restored peace to the world. The climactic battle has just begun. But the fact that the greatest armada in all history was able to strike audaciously under the guns of the vaunted Atlantic Wall is monumental in its tribute to the battle that has been fought and won in the mines and on the forge, at the drafting board and on the production line, on the farm and in the forest. Never was a fighting force so superbly equipped, so well supplied.

The part played by wood in this smashing assault on Hitler's continental fortress was written between the lines of almost every account that flashed back to these shores: Minesweepers and subchasers, each containing enough timber to build ten average homes, clearing the way for our 4,000-ship armada; great, steel-hulled battleships, spouting destruction from decks of wood; plywood assault boats, PT boats, built largely of lumber, LCVP landing craft, ninety percent wood; wooden barges and supply vessels, loaded with munitions, food, medicines and other supplies all boxed in wood.

Overhead, in the greatest aerial assault man has ever witnessed, gliders on wings of wood, in trains fifty miles long, sweeping in with airborne troops; giant Halifax bombers, whose propellers consume 24,000 square feet of wood veneer, spewing block-busters on Nazi gun positions; all-wood Mosquito bombers flashing over their targets at 400 miles an hour.

All of this, however, was climactic. Wood's greatest battle has been waged over the months since 1941—1,400 board feet to house each fighting man, 300 to send him overseas, and fifty feet a month thereafter to keep him supplied. Each rifle shipped to the fighting front requires more than a foot of lumber; each motorcycle ninety feet; each anti-aircraft gun 875 feet; each giant bomber 5,000 feet. The North African campaign required 700,000 different items of equipment, most all of which were boxed in wood. Liberty ships transporting these weapons and supplies require ten carloads of lumber each, merely to hold the cargo in place. Floating drydocks to keep our ships in repair consume 1,800,000 board feet.

American forests, during 1942 and 1943, produced 38,000,000,000 board feet of lumber for military purposes, another 17,000,000,000 feet for indirect military use. They helped secure our beachheads in Normandy. They will help hang Hitler in Berlin.

WOOD MAGIC

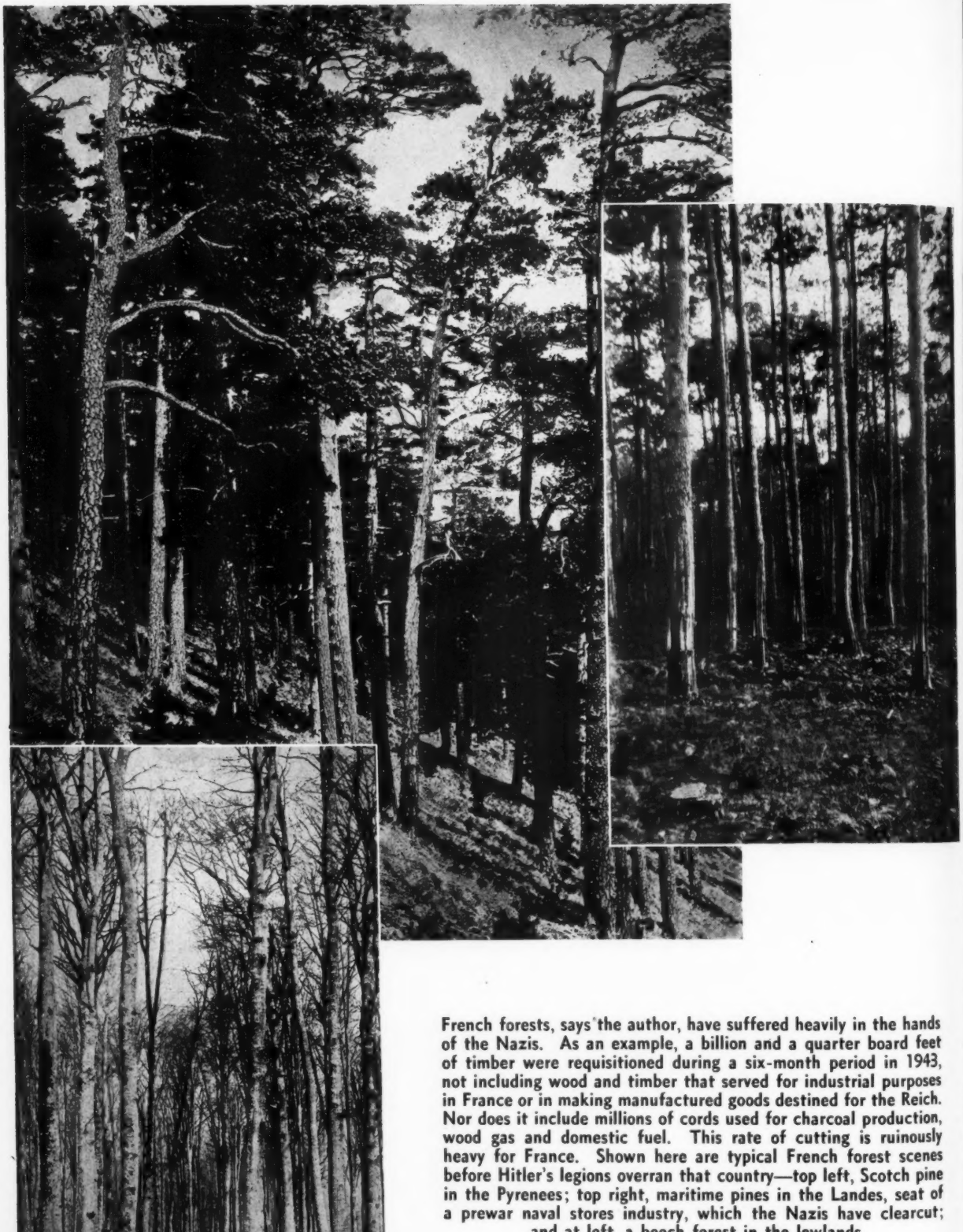
PREDICTIONS of a new era for wood to follow the war continue to grow and spread. These stem mainly from developments—not yet clearly revealed—growing out of the conversion of wood to meet war's emergency needs. Some remarkable things, we are told, are being done by the chemists and wood technicians, the full details of which will not be available until the war is over.

These developments, however, are not all veiled in military secrecy. Recently, for example, a process of treating wood which borders on the magical was demonstrated in New York by the research department of the E. I. du Pont de Nemours & Company and has since received wide publicity in the press. The treatment is described on page 334 of this issue. Starting with the discovery several years ago by the U. S. Forest Products Laboratory at Madison, Wisconsin, that urea has a transmuting effect on the structure of wood, the du Pont research staff has developed a chemical which it claims makes wood regardless of species and natural structure interchangeable for many uses. The chemical employed is termed methylolurea, obtained by reacting urea and formaldehyde in proper proportions and under controlled conditions.

The effect of this treatment, according to the company, is to transform wood to a product with properties fundamentally different from wood, thereby making many species of trees available for a wide variety of uses to which they are not now adapted. According to Dr. J. F. T. Berliner, head of the du Pont research staff which developed the process, wood may now be endowed with the properties required and one need not be limited by its natural characteristics. The methylolurea treatment, it should be stated, is still in the laboratory stage in that it has not yet met the test of commercial application, competition with other materials and popular use of its products. That will be its real and final test.

If the claims of the company are borne out in commercial application, the development is of revolutionary significance. It could well upset our present traditional conception of silvicultural research and practice which has centered so largely on the growing of a limited number of tree species naturally endowed with special characteristics demanded by custom and use. Conceivably it could widen forestry to the raising of fast growing trees regardless of species, and the production of the greatest volume of wood per acre thereby making timber cropping more profitable and widespread. It could stimulate and expand tremendously the wood-using industries and bring to wood a popularity and marketability far beyond anything it now commands. And, finally, it could accelerate the building up of our national wood supply and hasten the day when the nation's annual forest growth exceeds the drain.

This may sound fantastical. So did speculative thinking a few decades ago about the airplane, radio and many other developments that have since revolutionized our lives and our national economy. It is, to be sure, premature to attempt fairly to appraise possibilities of this and other current research seeking new and improved uses of wood, but it is the part of progress to keep our minds alert to these developments and to be prepared to apply them professionally, industrially and in every other way that will help the forests serve our people in the future even more bountifully than they have in the past.



French forests, says the author, have suffered heavily in the hands of the Nazis. As an example, a billion and a quarter board feet of timber were requisitioned during a six-month period in 1943, not including wood and timber that served for industrial purposes in France or in making manufactured goods destined for the Reich. Nor does it include millions of cords used for charcoal production, wood gas and domestic fuel. This rate of cutting is ruinously heavy for France. Shown here are typical French forest scenes before Hitler's legions overran that country—top left, Scotch pine in the Pyrenees; top right, maritime pines in the Landes, seat of a prewar naval stores industry, which the Nazis have clearcut; and at left, a beech forest in the lowlands

A Pre-Invasion Picture of

THE FORESTS OF FRANCE

By GEORGES BOIS

As a member of the French underground, the author, a recent visitor to this country, has had unusual opportunities to know at first hand what is happening to the forests of France under Nazi control. What he presents here is, to the best of our knowledge, the most recent appraisal of the forest situation in that stricken country. Georges Bois is not his true name. For reasons that are obvious, his identity cannot be revealed until France is again free.—Editor.

WHAT IS the condition of the forests of France as the Allied invasion which will set her free gets under way? This I can say: Should the war last two years more, there would be no trees left in France to cut, if the Germans could find the men to cut them. Even should the war stop tomorrow, French forests have suffered greatly at the hands of the Germans who have not spared them any more than they have spared other French resources, industry, or commerce.

As soon as the Nazis entered France they took stock of our woodlands and started to exploit them for their own profit. With that objective, they used devices and means that were many and clever. Contrary to what they had done in other industries, they did not introduce their own people into the management of wood-using industries, nor did they try to buy wood supplies direct from French forest owners. They were satisfied to let middlemen do the buying for them—at huge prices. Money does not cost them anything, being derived from the costs of the German army of occupation which are paid for by the French people. They set up local companies for the special purpose of buying forest products, timber tracts, sawmills and other wood-using plants. These German-sponsored companies immediately started wreaking havoc in our forest patrimony under French names.

In big business undertakings, the Germans do not stop short of anything. If necessary to achieve their purpose they make use of influential collaborationists. For instance, in 1942 Pierre Laval bought a splendid coniferous forest of 12,355 acres, belonging to about fifty different owners. To overcome all the difficulties arising from deals that had to be negotiated with so many separate parties, it became necessary to get somebody capable of forcing the hand of these most unwilling owners. Laval had no scruples in this regard. Shortly after he had made the purchase, he turned it over to a group of Dutchmen who immediately floated a "French Timber Development Company." The head of this company was supposed to be the ex-Belgian consul at Tours. The fact is that no Belgian consul ever existed at Tours.

The people of France will need lumber to rebuild their homes—tree seed to reestablish their forests

This may give some idea of the methods the Germans use to camouflage their present exploitation of France. It does not prevent them, on the other hand, from requisitioning large quantities of wood products for their own use.

I am happy to say that our French Forest Service, living up to its traditions, has tried and is still trying to resist German encroachment in the interests of forest conservation. The means at its disposal, however, are very meagre, consisting mainly in attempts to enforce an extremely severe control over forest utilization and the operations of the forest products industries. It is forbidden, for example, to cut fuelwood from trees suitable for sawtimber. The stripping for tanbark production of young oaks felled for fuelwood is compulsory. All birch is reserved for bakers' or industrial use. Chestnut trees are reserved for the making of tanning products. Utilization for charcoal is compulsory down to five-eighths of an inch diameter.

Such regulations are intended to force the best utilization of timber and result, in a measure, in slackening the destruction of French forests. They have been more than successful on the national and communal forests where it has been able to hold cutting near the normal peacetime amount. In privately owned forests, however, regulations are often disregarded and ill-advised operations prevail, despite high penalties. The German owned or controlled companies, as might be expected, are not interested in conserving French forests.

Since sixty percent of the forests of France are privately owned, it is not difficult to understand that destruction has been the fate of a large part of the French forests. Destruction is particularly severe in the Landes region of southwestern France, the seat of a naval stores industry second only to the American southern pine region. The Landes forests have been clearcut for sawtimber, mine props and pulpwood.

One of the devices used by Frenchmen to save their forests has been a licensing system. For any concern or individual

to conduct felling operations, it is first necessary that they obtain a "forest management license card." This card is very difficult to obtain. It is issued by the "Wood Committee," an organization composed of Vichy-appointed agents and men in the forest products industries who control the forest products trades, only after investigation and approval by the Departmental Chamber. These chambers are the regional governing bodies in France, a sort of cross between American state legislatures and county commissioners. Since last year it is practically impossible for a company or individual to start a new woods operation, the government opposing the establishment of new operating concerns.

The possession of special coupons, much like ration coupons in this country, is required for selling, as well as purchasing, wood or wood products, charcoal, naval stores, wood distillation products, tanbark and so on. These coupons are distributed by the "French Industries Professional Organizing Committee." The manufacturer or merchant who receives them in exchange for his goods forwards them to his "Organizing Committee" which supplies him, in exchange for the corresponding quantity, coupons enabling him to buy timber, standing or felled.

In addition, all prices are fixed and any infringment of the regulations or sale at a higher price is punishable by extremely high fines. If, however, the operator wants to stay in business, it is necessary for him to do at least some bartering because the government provides very inadequate quantities of materials and equipment essential to forest operations—gasoline, oil, tires and tools. It is imperative that charcoal or timber be bartered for such necessary items.

Another factor contributing to the intensified felling of French forests lies in the growing use of fuelwood for making charcoal and of wood for gasogenes. In France, at present, all motor cars and most German motor cars burn *gaz des forets,* or wood gas. To illustrate the scarcity of gasoline, a physician, one of the few professions still entitled to it, draws five liters—a little over a gallon —a month.

The armistice of 1940 created great unemployment in France. Immediately afterwards, the French Forest Service started cutting operations on national and communal forests instead of selling stumpage as was the former custom. This was done in order to provide employment for men who would have otherwise been idle. These included foreign workers—Poles, Indo-Chinese left in France, youth associations such as the "*Compagnons de France*" and "*Chantiers de Jeunesse,*" a sort of enforced CCC for youngsters. From the time the Nazis began to hunt the Jews down in the occupied zone, they created companies of Jewish workers, in which any Jew arriving in the non-occupied zone was enrolled at once.

Two more years of Nazi occupation, the author believes, would bring scenes like this to all of France

The timber from publicly-owned woodlands soon proved insufficient for the employment of so many men; so the Forest Service requisitioned and operated privately owned forests. Toward the end of 1943, however, the operation of forests by the government was waning, the men being deported to Germany by whole companies in order to make up the contingent of workers promised by Vichy. Besides, even the government began to find it difficult to acquire operable forests by requisition.

So the Germans are no longer getting the timber supplies from France they once did—nor the French, for that matter. At present, there are 2,800,000 Frenchmen in Germany, including war prisoners and deported workers. Such a shortage of labor paralyzes the economic life of a country. On the other hand, an overwhelming majority of the men who are of an age to be deported keep "underground" and do not work, but many of them are in the forests, or as we say, borrowing a Corsican phrase, "*dans le marquis.*" They will descend upon the Germans when the time comes.

Some idea of the willingness shown by French workers to go to Germany may be gleaned from the following: In June, 1943, in the Clermont-Ferrand department, 7,016 men were called up but only forty-eight went to Germany; in Allier department, but eight out of 387 responded; in Macon but two out of 250; while in Charolles only one Frenchman out of 180 called up went to Germany.

All men when they reach twenty years of age are called upon to go to Germany for labor service. In addition, every branch of the French economic structure is compelled to contribute contingents drawn not only from the laboring classes, but from management groups as well. The country is thus depleted, not only of produce, but also of men.

Here are a few figures relating to German forest requisitions during the first six months of 1943, not including wood and timber that served for industrial purposes in France or in the making of manufactured goods destined for the Reich:

Hardwood lumber, 404,941 metric tons, or 267,261,000 board feet; softwoods, 2,336,490 metric tons, or 778,830,000 board feet; railroad ties, 306,000 metric tons, or 204,000,000 board feet; mining timbers, 59,000 metric tons, or 40,000,000 board feet; charcoal, 110,000 metric tons; wood for gasogenes, 324,000 metric tons, or 416,000 standard cords.

These six-months' figures give some idea of the quantities that have been levied for direct shipment to Germany for the years since July, 1940. They may seem small to Americans but, I assure you, they are ruinously large for France.

The total production of charcoal in France last year totalled over 4,000,000 cubic meters. This amounts in American measure to about 5,500,000 standard cords. In addition, some 1,700,000 metric tons of wood were used directly in gasogenes for motor fuel. This represents slightly more than 1,000,000 cords. So a total of over 6,500,000 cords was demanded from the French forests to replace gasoline, nearly all of which the Germans reserved for themselves. Furthermore, the lack of coal caused an increase in the consumption of domestic fuelwood, which stood at 5,500,000 cords in 1938 and went up to 7,500,000 cords in 1943. Even with this increase, thousands of French families were un-

(*Turn to page* 364)

A STUDIO IN THE REDWOODS

Eighteen Acres In a Redwood Forest and Opportunity to Build That House of Dreams —— Here is Adventure Close to Everyman's Heart

By LAURA ADAMS ARMER

AT FIRST sight the small redwood clearing was not alluring as a home place. Fireweed and yarrow, salmonberry and brake-ferns overgrew fallen logs and blackened stumps. Giant burned snags and partly dead trees towered in a semi-circle against the sky, revealing the devastation wrought by logging and fire.

An unfinished log house of good lines, a promising spring and a small price induced our friend to buy the place. As artists looking for new adventure, we decided to build a one-room studio adjoining the house. We were invited by our trusting friend to do the landscaping.

In early spring we began cleaning up. The soil was turned over for a garden patch sloping gently toward a jungle of alders, Port Orford cedars and second-growth redwoods. Our friend's wife and children pulled out the roots of numberless brakes and berry vines from the loosened soil.

One of the huge blackened redwood stumps, hollowed by fire but still enough alive to support young shoots, became the nucleus of our gardening ambitions. Fifty feet in circumference where it left the ground, it had been cut by lumbermen half a century before. Its hollowed heart lay full of lesser logs; its open side was barred by mere babies, trees three feet in diameter. Cross-cut saws and strong, young neighbors removed the surplus logs.

The practical owner of the Eden-to-be installed a water pipe for a fountain. A mountaineer hauled moss-covered rocks for a mound around the pipe. The redwood grotto stood ready to plant. Trips into the tall timber provided leather *Polypodiums* to fasten in place on the inner walls of the stump. These ferns grow on old redwoods, drawing sustenance from the bark and air.

Every trip to the woods and mountains proved to be an adventure, soul-satisfying to lovers of growing things. Where a spring moistened the soil of a shaded hillside, we dug roots of *Woodwardia radicans,* a fern, tropical in size and feathery profusion. On dark banks we found five-finger ferns. These we planted with the *Woodwardias,* for both need water at their roots. Lady ferns, deer ferns and common sword ferns soon converted the grotto into a green delight.

In the depth of the redwood forest back of our friend's eighteen acres, tall trees locked their leafy arms in close companionship. Dark brown trunks rose high above the ground before a single limb stretched forth to meet the sister branches of other trees. Light filtering through the green fell on mulch made through centuries by fallen leaves and crumbled twigs.

The redwood forest floor is softer than any carpet. Its pattern lies outlined with sword ferns on a background of wood sorrel, its leaflets dark green above and grayed magenta beneath. Its pinkish-lavender flowers blend perfectly with the darker hue of the leaves. Against a fallen log covered with gray fungi, the modest plants produce harmony of color most fitting to the somber woods.

Generally I like to be alone and quiet in the forest. Then I can best comprehend the age-old trees. I do not wish to be told their circumference or their height. Statistics bother me in the presence of majesty. On one occasion when I wandered with my basket and trowel among heart-shaped leaves of wild ginger, I came across one of our neighbors at work. He was a former schoolmaster whose love of the soil had brought him to the woods to hew a living from the trees. I heard the sound of his ax as I neared a sunny spot where a group of firs fraternized with bigleaf maples. On one of the trees a woodpecker was noisily at work.

The house of redwood in its forest setting. Garden beds are outlined with redwood logs—a 2,000-year-old stump provided stepping blocks

The "cliff-dwelling" ceiling made of peeled sapling redwoods

The woodsman rested his ax and looked in the direction of the woodpecker noise. There was work to be done there—a tree to be saved by proper surgery or made to relinquish its place to hardier, younger trees.

"Workers in wood, both of you," I remarked.

"Where there's a woodpecker there's rotten wood," was his reply. "Where there's rotten wood there is danger to the forest. The rot can spread. A forest is like society in that respect."

I sat down on a mossy log, feeling that I had found a companion who could teach me much of wood lore. He leaned on his ax handle and looked at me as if wondering if his listener were worthy of what he had to impart. At length he began to talk.

"The forest contributes to all the rest of the earth. If it is destroyed the very soil is lost. Roots conserve the moisture and help to hold the soil. Even the lichens, the mosses and fungi play their part in mother earth's laboratory."

The woodsman leaned over to finger the soft earth. "Look at this soil. It's rich and it's precious. It has been forming for centuries. Even the earthworms have helped. They modify the soil by drawing into their holes leaves which decay. That makes humus. Humus it good stuff, very good stuff. We need it. Did you ever think about the word itself?"

I answered that I knew nothing about the word "humus," but felt a world of interest in any word.

"Humus actually means the ground to Latins and Greeks," he explained. "It is related to homo, or humans."

"Just another way of saying we are children of the earth," I responded, much to his delight.

He sat down on a log opposite me, a smile playing over his bronzed features. "I know something that will make you laugh," he chuckled. "Take the word chameleon. It comes from the same root and it means ground lion. If ever I indulge in a coat of arms it will be a scutcheon of brown earth supported by chameleons rampant. The lion and the unicorn are all right for royalty, but two ground lions will do very well for an humble tiller of the soil."

After further sympathetic exchange of views the woodchopper went on with his work. Every ax blow increased the smell of fresh fir. It intoxicated me. Fragrance of bracken and leaf mold reached my nostrils as he cleared a space in which the tree could fall. The play of his mucles when he lifted the ax and let it descend, the sureness of his eye in placing the cut, the skillful twist of the handle to cut the V and send the chips flying, were part and parcel of the wholesomeness of these magnificent woods.

I went back to our new garden with a basket full of treasures to be planted and a mind full of wealth to relate to my husband. I passed brown-spotted leaves of adder's tongue with their gray and brown flowers so akin to the soil under the redwoods. They were as ghostly as the somber forest itself where the mosses thickly covered every inch of fallen logs. I took a plant to be painted by my artist husband.

Away from the woodsman's ax no sound disturbed the forest. No wind moved in the treetops; no rain fell among the ferns and wild flowers; no bird notes told that spring was preparing a feast among the crimson-flowered berry vines. But something in my heart told me that I had found Elysium.

Through the acquaintance made in the woods we were able to employ men to fell small redwoods for the building of our studio. Already the practical owner of the place had made a stone foundation and started our chimney. He surprised us every day with his great wealth of mechanical knowledge. He cleaned and boxed the spring and installed a gasoline pump. On one of the old black stumps he built a redwood tank painted inside with heavy tar. The best water in Del Norte County runs through our pipes, a hundred percent pure.

When the logs were cut for the studio walls the bark was left on for a rustic effect to correspond with those on the building already started. These were set upright, making the inner walls nine feet high. When the roof was to be made our philosophical neighbor cut the shakes by hand, using twenty-four-inch blocks of redwood taken from a

A green delight is the fernery, created from plants and moss-covered rocks brought in from the deep woods back of the studio

fallen giant. Raw material lies all about in the forest. Labor constitutes the wealth which makes it available. How I have longed for the strength to fell trees, strip bark and lift logs!

With roof on, windows and doors hung, ply-board backed by tar paper paneling the room, the real fun began. Up to this point our studio was a well built room of good proportions, no different from any other room.

We were to have a de luxe ceiling. It was suggested by our friend whose memory of a cliff-dwelling ceiling in New Mexico prompted him to ask for a similar one for the studio. The idea inflamed my imagination for I, too, knew the old ceilings of the first Americans. Made of cedar logs crossed with small branches, they were not only utilitarian, but very beautiful.

Our ceiling was to be made of sapling redwoods cut from the woods on the place. Twenty-seven four-inch trees were felled and made into sixteen-foot poles. These were peeled with draw knives and placed cross-wise of the room in nine groups of three poles each. The room is sixteen by twenty feet. The spaces between the groups of three poles were filled solid with short two-inch poles set at right angles to the long ones. (For one who dislikes statistics, I seem to be lost in them.) The photograph of the ceiling at the top of the opposite page illustrates the effect, but cannot portray the soft color and satiny finish of the peeled logs.

One ultra-modern artist from the metropolis thought at first glance we had made a bamboo ceiling in the latest mode. We reminded him that all moderns revert to the primitive in art, finding fundamental laws of harmony.

With a cliff-dwelling ceiling and Navajo rugs on the floor we have brought a flavor of the Southwest to our redwood country. For a molding to finish the space between ceiling and walls we used a peeled redwood log twenty feet long. This straight pole was split lengthwise into four pieces, making a heavy quarter-round finish. Our patient carpenter fitted the corners by first making paper patterns of the joints.

While the carpenters were busy with the room, our resourceful friend constructed an outdoor dining-room with a roofed table to accommodate eighteen people. The children have their playhouse in a tall, hollowed redwood. There they give impromptu vaudeville shows or invite their young neighbors to share their bread and jelly. The grove is an ideal place for the little ones. Birthday parties are held in the shade of giant redwoods which had their beginning before the birth of Christ.

The ancestors of the trees living today have known a lineage going back millions of years. At some distant age they thrived in Asia. Today, only in California and a small section of southern Oregon does *Sequoia sempervirens* still live on.

Fifty years ago lumbermen made fortunes from these trees. Cutting a giant became the work of giants. It was no child's play to fell a tree sixteen feet in diameter. We feel very much like pygmies among our trees. Our little studio, made of the young trees, gives us a sense of peace. We reach our door by walking upon stepping blocks sawn from a 2,000-year-old stump.

Split log moulding above a window garden in the house of redwood

Our porch boasts a rustic fence made from a Chinese pattern. Our garden beds are outlined with redwood logs set upright in the ground. Our's is a house of wood set in the woods. Good fir logs crowd our woodshed. The chimney draws with energy, fully satisfied with the chunks of old snags felled by a skillful neighbor.

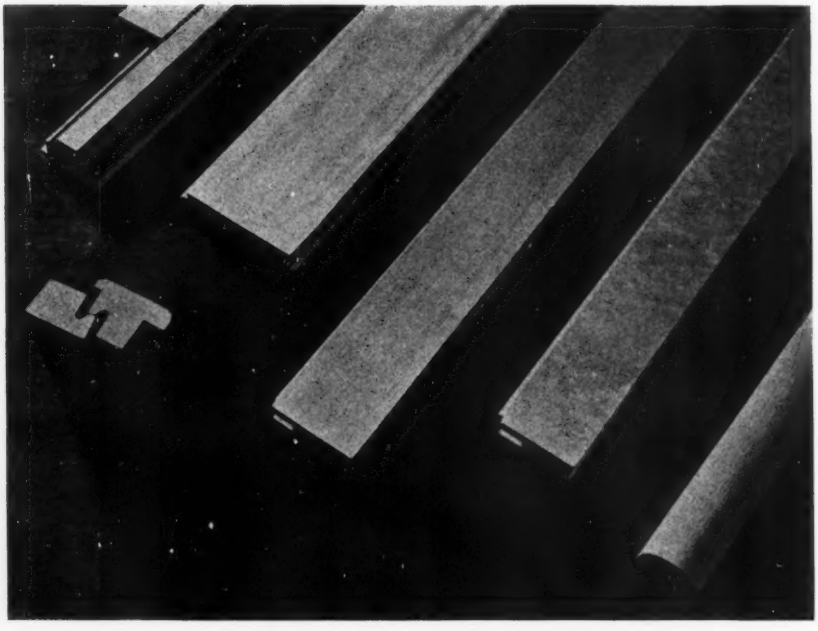
As to the landscaping of the place, it is a joyous task. A driveway has evolved through our friend's work with a shovel and wheelbarrow. We have started a grape arbor in just the right place. It also is made of logs. We find that native shrubs are most fitting for the garden, so huckleberry, azalea, rhododendron, manzanita, redbud and small evergreens prevail. In the shady beds, trilliums and columbines share the space with mimulus and violets.

Our studio in the woods stands for peace profound, the peace of the soil which nature has produced. Humus and humans have made the pact of friendship here on the coast of northern California.

The children have their playhouse in an ancient, hollowed redwood. Nearby is a large outdoor dining room with a roofed table

SUPER-WOOD HAS ARRIVED

New Chemical Process, Discovered by Government Scientists and Developed by duPont, Makes Soft Woods Hard and Hard Woods Harder



Examples of building items which may be treated with methylolurea. Left to right, sash material, pine, gum and maple flooring, and dowel

Hardness of methylolurea treated wood block, as compared with untreated block at right, is illustrated by indentations made by clamp

By HARLAND MANCHESTER

TODAY, when Junior casually drops his Boy Scout ax on the dining room table, or when his mother upsets nail-polish remover on her dresser, there is a heavy refinishing bill to pay.

Tomorrow, a little sandpaper and a touch of furniture wax will make things right in fifteen minutes. In a table-top made of "transmuted wood," the "finish" goes all the way through; spilled coffee or cocktails, hot dishes, scratches lose their terror. This furniture will stand up under almost any kind of outrageous treatment. You can soak it in water, for instance, and it won't warp. And in spite of its iron constitution, it will have a beautiful, satin-like sheen displaying to best advantage the natural grain of the wood. And, of course, furniture is but one of hundreds of uses for the "super-wood."

In a sense, "transmuted wood" isn't wood at all—it's a completely new material. A group of chemists of the duPont Company headed by Dr. J. F. T. Berliner developed it, acknowledging heavy debt to work done by government scientists at the U. S. Forest Products Laboratory at Madison, Wisconsin.

In the process the wood is impregnated, under pressure, with a cheap, colorless, odorless, chemical compound. Dr. Berliner explains that the chemical combines with the components of the wood to form large molecules, and hardens into a plastic resin which fills the tissue of the wood. After undergoing the heat and pressure treatment necessary to "set" all plastics, the resulting product, though slightly darker, looks like the original wood, but it has been changed into something else. One might call it a fortified wood, or a combination of wood and thermo-setting plastic. It is only slightly affected by water, it cannot be softened by re-heating, and it has hardness, fire-resistance and possibilities of finish unknown to the original wood.

When laboratory men want to demonstrate how hard a wood is, they drop a marble on it and measure how high the marble bounces. After a piece of pine

or maple has been "transmuted," the marble bounces more than twice as high.

No matter how hard a wood is, the new process can make most species harder, Dr. Berliner points out. While soft maple can be made harder than hard maple, hard maple in turn can be made harder than the century-slow-growing ebony — hardest of the well-known woods. Dr. Berliner held the flame of a blow torch on a dry piece of softwood which had been transmuted. It charred eventually, but it would not continue to burn when the blow torch was removed. There are, of course, chemical fire-proofing treatments, but the chemicals tend to leach out after long exposure; this wood is fireproofed practically for its lifetime.

A white powder called methylolurea —a mixture of dimethylolurea and urea —is the chemical that does the job. Up to 1920, all our urea, a chemical used in making plastics, was imported from Germany at prices as high as fifty-seven cents a pound. Now, duPont's Belle, West Virginia, plant produces it in great quantities from carbon dioxide and ammonia and sells it for less than four cents a pound. It is so cheap and abundant now that is is used for fertilizer.

W. Karl Loughborough and other research men at the Forest Products Laboratory made the first experiments with urea crystals as a seasoning agent for lumber (see "Wood Chemistry Enters a New Age," by J. A. Hall, February issue). They found that by sprinkling it on green lumber they could prevent checking and cracking. Their next discovery was that if green lumber was soaked in a solution of urea, and heated, the wood could be bent into any desired shape. To prevent this bent wood from losing its shape when reheated, they added formaldehyde to "set" it—and so had the process which produced quick, permanently shaped timbers for ship keels, glider bodies, and other uses.

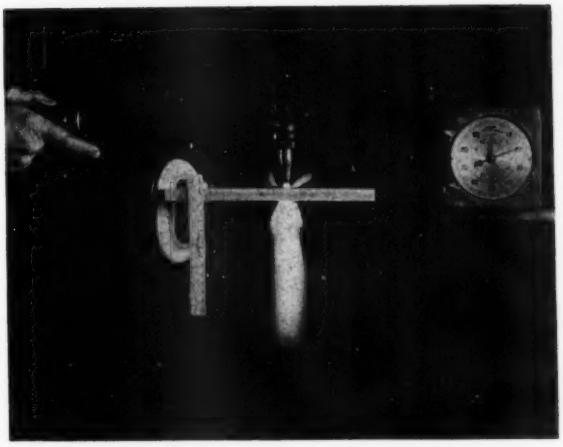
Meanwhile, duPont developed the methylolurea solution which gives promise of revolutionizing overnight the lumber situation. Out of more than a thousand varieties of wood available, we are using no more than fifty and discarding many grades of them. The new chemical treatment will take these other varieties—species too soft, too weak for use—and transform them into hard and durable materials. This will ease the demand on the naturally hard woods. Soft maple, yellow poplar, tupelo gum and several varieties of soft pine can be treated to replace hard maple, oak, walnut, and other "cabinet" woods.

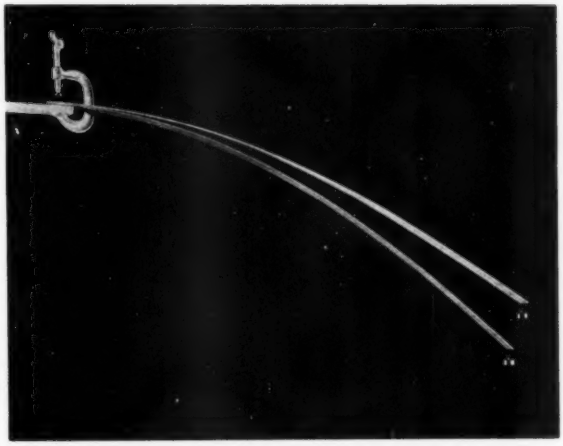
In effect, the discovery of methylolurea means that overnight the forest resources of the United States may be multiplied many-fold. The fast-growing pines which cover some 180,000,000 acres of southern forests, according to Dr. Berliner, will become interchangeable with the slow-growing hardwoods; and farmers in many parts of the country may have a new market for the second-growth softwoods in their lots.

One of the most obvious advantages of transmuted wood is the great saving in labor and materials in finishing it. Before your maple table leaves the factory, a long series of expensive operations are performed to give it a smooth, flawless surface. Transmuted wood has a built-in finish that goes all the way through.

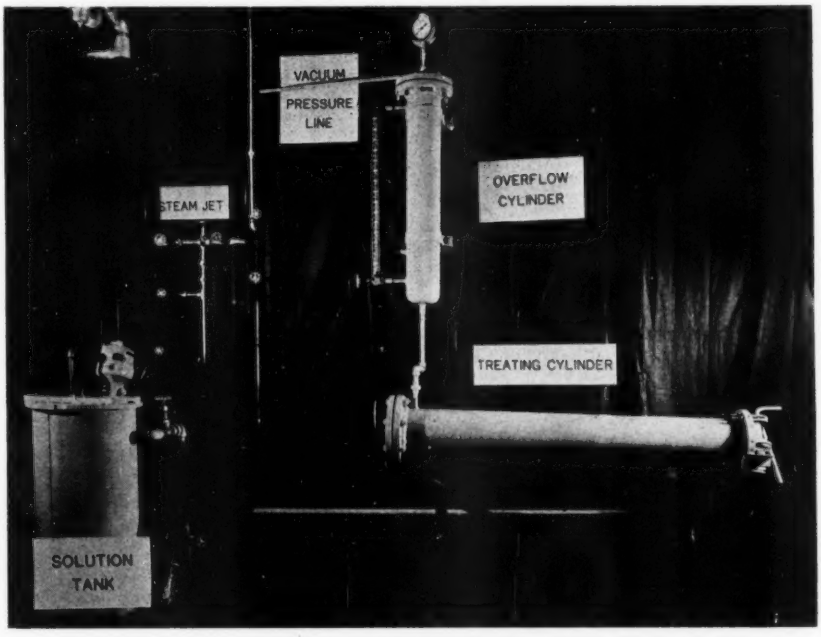
I took one sample, which looked and felt like any piece of porous, unfinished wood, smeared it with ink and various acids and poured boiling water on it, and it would not stain or absorb moisture. A little wax gives an excellent finish which brings out the grain. To produce a harder finish which will take a high gloss,

(*Turn to page* 365)

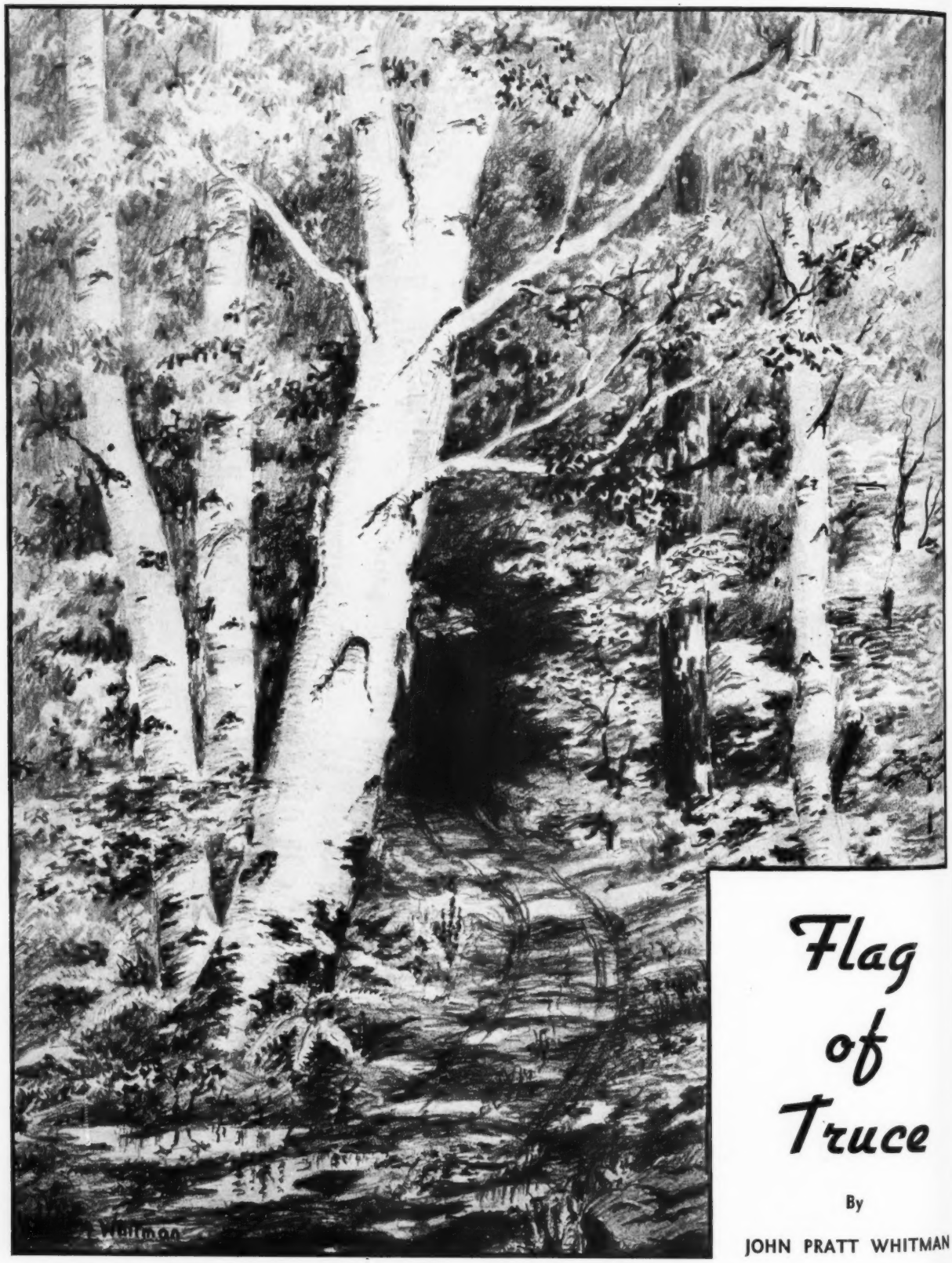




Treated wood resists flame (above) twice as long as steel plate of equal thickness. Methylolurea also increases stiffness. The upper strip (below) is treated



Experimental treating unit. Wood in cylinder is impregnated with methylolurea solution by a vacuum and subsequent use of pressure



Flag of Truce

By

JOHN PRATT WHITMAN

. . . . How the White-Robed Lady Birch Brought Equality, Brotherhood and Freedom to the Forest

TIME was when trees, both large and small, and belonging to a thousand species more or less, sought on the surface of the earth their own pre-empted ground.

Their claims were staked apart with signs that could be read by all—"This is the land wherein White Pines may grow," "Here is the Maple lot," or "Here is the acreage for Ash." So ran directions throughout the wilderness for all the rooted folk.

And in those heroic days the wooded hills resounded with the crashings and the bickerings of the legionary limbs and the snarls of saplings: "Look out for the encroachments of our enemies, the Elms!" or "Let us whip the willows worming through their limits for more space!"

Beneath the surface there was continual rage among the roots when tubers of the Tamaracks engaged the fibers of the Spruce.

When frosts had loosened all the leaves each group was careful not to spread its mulching upon another's ground and thus enrich some alien need for better soil. "We help our own and that is all," snapped Hemlocks. "We do not grow for charity; all trees take note."

And so it went through unrecorded time until a little tree known as the ubiquitous Birch sprang up wherever soil would germinate its seeds. No threat nor taunt among the hardwoods or the conifers could keep the intruder from entering where she chose.

After many years of trying to uproot and banish the hateful pest, the forest, in its dire distress, called a council of the trees. And there before an assembly of the wise ones of the woods Lady Birch plead her own cause.

"I have no claim that I can call my own, so I have become a citizen of all the range. My seeds take chances with the rest of you. Where I grow, I let my dried leaves fall wherever winds will take them to help whoe'er they will. My roots will never quarrel nor pick fights, and my gray clothes do not step out beyond the line of modesty. I think I prosper as I do because I give my share to all around, and grow only where the earth is better for my kind than for the rest of you.

"I do now propose the forest change its ways with each and every tree seeking the ground best adapted to its growth, and fight with none because he can do better in a special place. In this way I seem to see in time a stronger, finer forest standing trunk to trunk against drought and storms. Our roots will mingle and enmesh, our branches make a woven carpet with warp embracing happily the woof. Our angry crashings will be turned to gentle whisperings; and then the day will come when we shall know that injury to one is injury to all, be it from fire or flood or hurricane.

"I assure you, friends, if you do not now accept my sane advice, I and my kind may over-run you all while selfishly you remain aloof."

Great was the consternation far and wide, for tradition and ancestral ways are rooted in the rocks of prejudice and pride. There came the questions of equality, brotherhood and wide freedom for the bark-clad breed.

At last the forest faced its fate and leaders called Lady Birch again. Said they:

"We believe you have the better way and, therefore, that all may know the news we here appoint you our flag of truce. You from now on shall wear the whitest robe of all trees that grow. You are our emissary of peace announcing everywhere, on mountainside, in broad valleys and on the rolling hills, a perpetual armistice. You are our sign of peace."

And from that day the forest has joined hands in a glorious brotherhood, and far and wide the Lady Birch, like a banner shaken to the breeze, waves to and fro her message to the trees.

THE AMERICAN WILDERNESS

Next to Their Own Firesides, America's Fighting Men Around the World Find Spiritual Strength in Memories of Their Rugged Outdoor Heritage

By JOHN L. BLACKFORD

A land to fight for is Montana's picturesque Island Lake country

"OF COURSE I miss the people back home—but there are other things I long for more. The mountains, for instance, and a glimpse of wildlife in the woods; the sight of pine and spruce and hemlock; fishing, both for the sport of it and for the feel of slippery rocks and the ache of cold water swirling about my feet. For the first time since I've been overseas, I realized while looking at the pictures you sent me that what I would like to see most of all is the wilderness, especially my native Montana wilderness."

Thus wrote an Army sergeant from North Africa. Another letter, in similar vein, is at hand from an aerial gunner in the South Pacific. These men, like many others fighting around the world, like to write of what they remember, what is close to their hearts—not of what they do. And more than all else, save for their own firesides, America's rugged outdoors, its bountiful wilderness country, ties them to their native land.

This wilderness is today, except for the genius of its people, the country's greatest asset. A nation may possess mighty armaments, vast industries, huge cities, unmatched resources and superb technical skills; yet if its spiritual strength is low it may fall prostrate at the first heavy blow. Let us again become too greatly concerned with material wealth, too seriously embroiled over its division, too far removed from the untilled soil that instills our strength, and too little inured to its primal dangers and privations, and we, too, may perish.

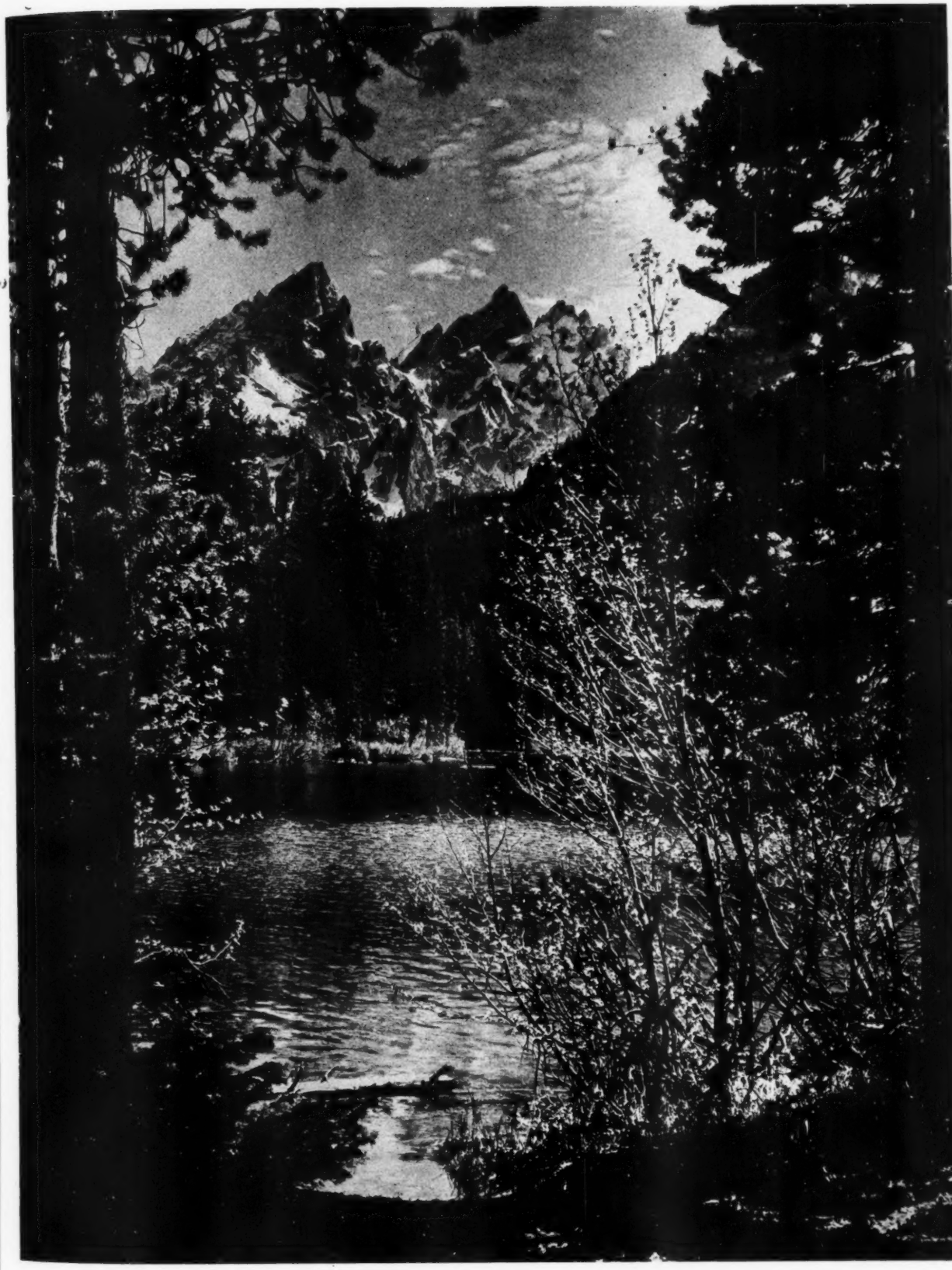
It is scarcely more than a generation since the day of the last pioneers, but we live in a new era when artificiality advances apace. In the events of this war we see our instincts already dulled. The nation draws now upon the vast reservoir of its pioneer heritage and is still solvent. Yet without continued contact with the unspoiled land it cannot remain so.

In the face of our many minor defaults at home, the faith of the fighting man has remained unshaken. The American soldier and sailor and marine looks beyond human frailities and neglects to a land that is worth fighting for. "I miss the people back there—but there are other things I long for more. . . ."

We must always keep America that way. The number of those who will enforce the preservation of the wilderness must become legion. We must not wait until it is gone to realize what it means to us. Public education still fails us in this. Histories tell of the winning of our land with so little appreciation of what was gained that there are but few who do not ruthlessly exploit it. Physical geographies never reveal that we live in an age of unrivaled geologic splendor. What respect have millions of us acquired for other forms of life save for the values written in dollar signs? How many, even among those who imagine they love these lakes and forests, but do not litter and deface them?

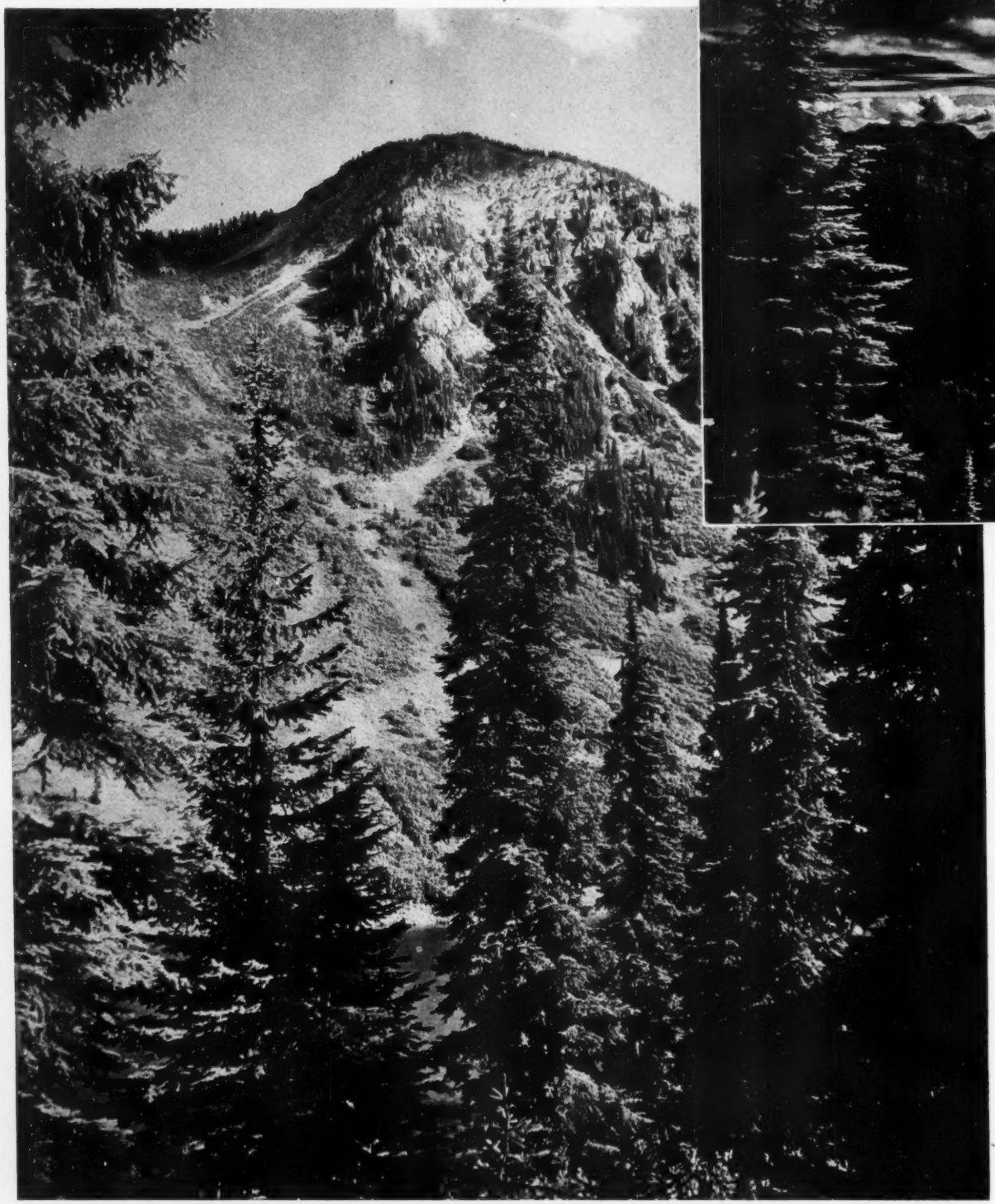
This land that inspires American boys to victory in the hell of modern warfare deserves full realization of its value from all. No other people live with such varied magnificence about them. It is the American wilderness that is providing our defenders, who have left these shores, with so many of their most imperishable memories of home. Memories, for instance, of the Grand Teton of Wyoming, pictured on the opposite page, emblematic of the fearless frontier spirit and traditions that built the nation. Or of the great Whitefish Range in northeastern Montana, mantled by untracked forests of spired spruce, a country unmarked by the passing of others; or of Island Lake in western Montana, where fleets of waterfowl race in on "northers" of late autumn, and ride in wary flotillas between waving walls of golden cattails, and where beyond fir-tamarack forests sweep away over green, round-shouldered hills. Or the jumbled, ice-sharpened peaks of Glacier National Park in northern Montana, cut by scenic highways, but to a great extent a true wilderness, preserved intact.

Or California's Death Valley, a hundred years ago a dread barrier to the



One of our most historic summits, the Grand Teton in Wyoming, is emblematic of the fearless frontier spirit and traditions that built the nation. Picture what this grandeur will mean to a marine returning from a South Pacific jungle

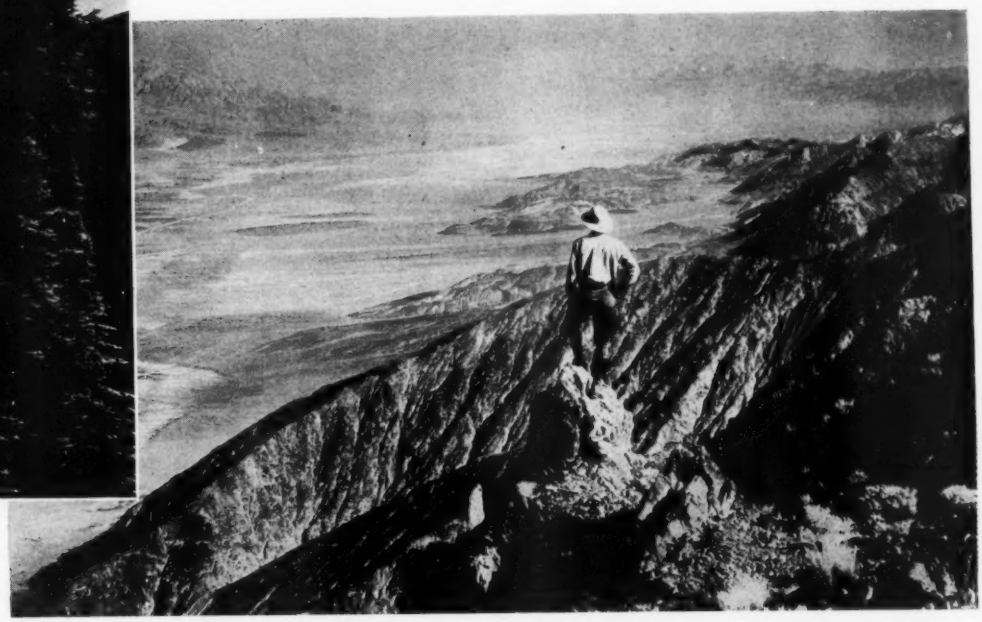
The ice-sharpened peaks of Glacier Park (right) are revealed in this superb view as the mountain massif of the Northern Rockies



Untracked forests of spired spruce mantle the 8,000-foot peaks of the Whitefish Range in northwestern Montana. Impenetrable thickets of mountain willow clothe steep talus slopes like plush carpets of green

and to which to return. The Arizona desert calls never more subtly than at sunset at the foot of the Santa Catalinas.

There are other wilderness empires—many others—in this America, the very recollection of which inspires our fighting men to great purpose and greater deeds. They spread out along the Rockies from the desert of the Southwest to the ice-capped peaks of western Canada; along the California Sierra and the Cascades of the Pacific Northwest; in the Minnesota lake country; along the eastern Appalachians. These wild lands,—even more than our cities and industries, our enterprise and our skill, are America!



Death Valley, in California, dread barrier to the hardiest gold seeker a century or more ago, has successfully held its dangers—and its fascination

hardiest gold seekers. Though traversed by a surfaced highway, it is today as much a test as ever of expert wilderness craft across most of its shimmering reaches. In the kiln-dry heat of the valley floor birds have fallen in flight, and canteen water grows too hot to quench a dying man's thirst. No other primitive area has so successfully kept its dangers and its fascination.

Or the great Saguaro Desert, west of the Santa Catalinas in southern Arizona. To many men battling in drenched jungle hells or out on lonely, fog-bound sea islands, the arid desert wild of our Southwest calls with all the nostalgic memories of home. The desert's mystery, its strangeness, its vastness and its allure are to them tangibles that make America a living land for which to fight

Arizona's Saguaro Desert, like mountain and forest, is to our warriors one of the tangibles that makes America a living land for which to fight—and to which to return

OUT OF THE ASHES OF NESTUCCA

Two Sequels to Oregon's Great Nestucca Fire of a Century Ago

Born in ashes a century ago, but since untouched by fire, the Cascade Head forest as it appears today — spruce, hemlock and Douglasfir

By THORNTON T. MUNGER

A CENTURY ago a company of Indians was camping overnight on the Nestucca River, near where it comes out of the northern Oregon Coast Range to enter the Pacific, when they were awakened by a "bright red glare in the eastern sky which grew more and more brilliant. By sunrise great flames were seen leaping skyward from the summits of the hills." So rapidly did they approach that the Indians had no time "to pick up their scanty belongings, but hastily jumping into their dugouts paddled down the river to the ocean beach with all possible speed." There they took refuge from the flames and smoke until rains put out the fire.

This was the Nestucca forest fire of the 1840's—1845 or 1846 or perhaps 1847—as reported many years later to a now anonymous writer by Dick Harna, chief of the Nestucca tribe, one of the Indians who went through this experience. There are no other eye-witness reports of the fire, but its record is written in the charcoal of the trees it killed over a 300,000- or 375,000-acre expanse of the country's finest timber.

How it started will never be known. It is unlikely that lightning was the cause for thunderstorms are rare in the Coast Range of Oregon; it may have been from an Indian campfire or from fire that Indians to the east set, as they are known to have done customarily to enlarge the areas of "prairies" and open grass and browse land in the valleys. Or possibly it may have spread from the stump fires of some covered wagon pioneers or Hudson's Bay voyageurs who were camping on the eastern edge of this forest wilderness. There were then no white men living in this part of Oregon.

The fire certainly spread from east to west, for the dreaded dry, hot "fire winds" always blow here from the east. It seared a swath through the jumbled hills and twisting narrow valleys of the Coast Range, from the headwaters of the Nestucca to the Salmon River, and perhaps farther, a piece of land twenty miles wide and twenty-five to thirty miles long. It swooped over the top of Mt. Hebo, 3,153 feet in elevation, down to tide line, killing, but not consuming,

all in its path. Chief Dick Harna reported that when his tribe returned to their old haunts they found bands of elk and deer charred crisp, bear nearly barbecued, and "panthers with their bodies in the water, showed their ghastly cooked heads — denuded of every hair and sightless before death came."

The original forest was the superlative of a coniferous forest, trees four to six and occasionally eight to ten feet in diameter, upwards of 225 feet tall, growing in luxuriant density. Douglasfir, first seen by David Douglas not far north of here two decades before, was the chief tree; Sitka spruce was preeminent close to the coast, while western hemlock and western redcedar were principal associates, all beautiful in foliage and stately in form when living.

After the fire the hills were left bristling with the blackened snags and stubs of the dead trees, and the seared surface was littered with the fallen trunks of trees that had been burned off or blown over in the fury of the holocaust. Here and there a single tree or a group of trees in a sheltered cove or on damp north slopes escaped the full blast of the fire, and lived to show what grandeur there was to the original forest. But many of these giants succumbed later to the tiny bark-beetles that bred up in incredible numbers in the fire-killed trees, or they fell before high winds after being exposed by the killing of their neighbors.

Looking back we realize that this prehistoric Nestucca holocaust was a counterpart of the great historic Tillamook fire which in 1933 cast a similar blight on a corresponding but not so large stretch of the Coast Range almost contiguous on the north.

What is the sequel to this forest catastrophe of a century ago in the then uninhabited wilderness? It is a story both sad and hopeful, written in the forest cover as we view it today. It is a varied and checkered history that this little piece of earth has had, both in its ownership and in its treatment by man. For decades it was a no man's land visited only by occasional explorers or hunters. Later settlers, penetrating the narrow fertile valleys, cleared and burned out farms for themselves. As bottomland was taken up land hunger drove new settlers to locate homesteads on the hills, where more burning and clearing followed. In the whole ninety odd years probably not over eight percent of this original great burn has been cleared for plow or pasture because the

How 300,000 acres of the magnificent Oregon Coast forest probably appeared after the Nestucca fire of the 1840's, which seared a twenty-mile swath across mountains and valleys from the headwaters of the Nestucca to the Salmon River

rest is really "ultimate forest land," though more than half of it was at one time or another homesteaded.

In 1907, the remnants of the burn that had not been homesteaded or included in some other land grants were declared forest reserve by presidential proclamation, and later became a part of the Siuslaw National Forest. Since then many abandoned homesteads on the old burn have come back into public ownership and been added to the national forest. Not until 1908 did any of this burn have any protection; to the contrary, it was continually subjected to fire.

A southern portion and a northern portion of the Nestucca burn have had very different histories and show a diametric contrast in the consequences. The southern portion is known as the Cascade Head area because it embraces a prominent ridge by that name (given it by the early coast surveyor Davidson for the waterfalls that plunge off its headland into the sea), and the northern portion as the Hebo area because Mt. Hebo is its central land mass.

The Cascade Head area, over a territory of several thousands of acres, fortuitously escaped a second fire. The occasional firs, spruces and hemlocks that survived the holocaust shed seed on the bare forest floor; perhaps some ripe seed was on trees that were killed yet remained safe in the cones until the fire had passed and then fell on favorable ground. At any rate, a new forest of conifers sprang up on the burn, and has flourished on the deep loam soils with eighty inches of rain a year and just enough "filtered" sunshine to make spruce and hemlock grow their fastest. These trees soon formed such a dense canopy that brush, bracken fern and weeds were shaded out, and there was little dry flashy fuel on the forest floor to feed a fire that might have been left by hunters or strayed in from settlers' clearing fires in the valley below.

Repeatedly burned by settlers after the Nestucca fire, the Hebo area (top) as it appeared in 1912. Below, the same hillside today, covered with Douglasfir planted by the Forest Service thirty years ago

So the trees on Cascade Head that were born in the ashes nearly a hundred years ago have grown and grown until at the present time this is what we find: A forest of 200 trees an acre, mostly from twelve to forty inches in diameter and from 120 to 160 feet tall. It is practically even-aged, uniform in stocking, but varying in its proportion of spruce, hemlock and fir. To the forester it is the fulfillment of his dreams of the kind of forest he would like to create by his management plans. To the forest protectionist it is Elysium, for it is as near fireproof as any coniferous forest in this climate can be. To the timber owner it is a gold mine, containing as it does a prodigious volume of wood towards which the paper mills are casting covetous eyes and for which the sawmills will soon be equally anxious. To the recreationist it is as pretty a forest as any dense woods can be and, of course, it meets every requirement for soil and water conservation.

Interspersed with the second-growth trees are the crumbling ruins of the giants killed a century ago as proof of the character of the original forest. The spruces and hemlocks are but mounds of rotted wood, of the Douglasfirs there remain some stubs of solid wood, but the cedars are still sound and usable for fence posts.

Some of this territory that so fortunately escaped a second fire has been included in the Cascade Head Experimental Forest. Here a series of growth study plots reveal the astonishing productivity of these lands. For those who are statistically minded, here are a few figures: Eleven good-sized plots in normally well-stocked parts of the area averaged, an acre, 22,530 cubic feet of wood (262 cords); 129,700 board feet, gross scale, Scribner rule, in trees twelve inches and over; 253 cubic feet (2.94 cords) mean annual growth; 1,457 board feet, Scribner rule, mean annual growth.

This was in 1940, when the trees were considered to average eighty-nine years old—apparently some of them did not start immediately after the fire. At this prodigious rate of growth, it has been pointed out, 49,000 acres of such land could supply all the wood required to run a 150-ton sulphite pulp mill continuously ad infinitum at full capacity.

And this growth of considerably over 1,000 board feet an acre a year, or nearly three cords of pulpwood, has been realized without cost, the gift of Nature—except for fire protection, during the last thirty-five years. The area has been unusually fortunate that this splendid regrowth came without planting costs, hazard reduction work, or cultural operations, a present to this gen-

eration as some compensation for the virgin forest which was killed. Its cubic volume of wood is probably as great as that of the virgin forest, but the value of the old growth, because of the high quality sawtimber and peeler logs, is higher than of this young and knottier timber. However, this young timber on a normal market, where reasonably accessible to transportation, would bring a nice figure.

ty is said to have come in 1851.

The settlers had first to fell the dead snags with ax and fire and burn up the felled trees. Most of their burning had to be in the dry season so it was natural that their fires should spread through the bracken fern and from snag to snag over the hills. Probably the Hebo country seeded up to spruce, hemlock and fir right after the burn, like the Cascade Head country, but the first fire through and the surface converted to a sea of bracken fern, salal, thimbleberry and other worthless plants. Only here and there did a Douglasfir or spruce sapling or a clump of red alders gain a foothold and survive long enough to be immune to the periodic surface fire.

Some of these periodic fires penetrated beyond the bounds of the original Nestucca burn and killed thousands of acres more of adjacent virgin timber.

While the Cascade Head area was reseeded by Nature and the Hebo area, because of repeated burning, by man, the country in between is neither satisfactorily restocked nor so deforested that it needs planting. It offers a real challenge to foresters

Now let us go north fifteen miles and see how the Hebo area has fared in the same climate, the same soil and on the same old Nestucca burn. The Hebo country is intersected with a number of ribbons of rich bottomland that early invited settlers. The first came in a "big stick canoe with wings," according to Chief Harna, and this was probably at least six years after the Nestucca fire, for the first settler in all of Tillamook Coun-

the weeds and down debris annihilated the tender seedlings. Fire after fire spread from the clearings along the creeks—and they were encouraged. They kept down the "brush," made some temporary pasturage for the cows, made hunting easier. So the hills from the Nestucca River to the top of Mt. Hebo were periodically baptized in fire, the down tree trunks were gradually burned up, some of the snags were burned down

This whole section of the Coast Range, which once bore such a magnificent forest, had become a waste of worthless brush and weeds and seemed to be in a fair way to continue so under the periodic scorching that the white man's fires gave it. But along about 1908 organized fire protection became at least partially effective, first on the national forest and then on the intermingled pri-

(*Turn to page* 366)

TREES AGAINST SAND

By SIGMUND SAMETH

THE WIND howled across the southeastern lowlands of Missouri last May in one of its annual "big blows" but Art Riggs, who farms a quarter section near Kennett, was unruffled. He knew his young crops and land would escape damage. Equally unperturbed were Manley and Al Horner, brothers who farm at Hornersville. And so were hundreds of other farmers in Missouri's Dunklin County. In an area long known to be one of the most hazardous, agriculturally speaking, in the United States, it had been proved that windbreaks could nail down the sand ridge soils.

This spring Dunklin County farmers planted another quarter of a million trees in a program designed to control wind erosion. The trees were practically all black locusts obtained from the State Conservation Commission nursery at the cost of production. Most of the other states provide landowners similarly with seedling trees at rock-bottom prices.

The reason this tree planting program is so crucial lies in the nature of the alluvial soils which comprise the fertile lowlands. There are two kinds—the heavy black silt loams and the lighter sandy loams. The latter occur in broad flat ridges somewhat higher in elevation than the black soils. They are really long, broad sandbars, or "second bottoms," thrown up by centuries of floodwaters of the Mississippi River.

From March until July every year strong winds pick up the sand and whip it across newly planted and cultivated fields. Young cotton and other plants are scoured by the driving sand or buried entirely. The sand drifts like snow over fences and across roads. For years these "blows" were considered a natural hazard of Missouri agriculture. As a result of them some farmers had to replant their crops several times.

Back in 1937 Missouri's Agricultural Extension Service began to boost the idea of farm windbreaks. The idea took hold slowly. Farmers, as a group, are probably the most conventional segment

Drifting sand is common along the "sandbar" regions of the Mississippi River in the southeastern lowlands. Whipped by spring and early summer winds, it destroys young crops unless they are protected by tree windbreaks

of our population. They resent innovations, clinging doggedly to the old ways.

Much pioneering in the windbreak program was done by an obscure county agent named Bill Harrison, who never missed an opportunity to point out how trees can nail down shifting sand. He told farmers how shelterbelt plantings were saving the land in the "dust bowl" of the western plains. With Ralph Peck, an extension forester, he cooperated in setting out a demonstration planting of 2,000 young black locusts. After that modest beginning Dunklin County farmers purchased and set out 55,000 trees in 1939; 30,000 in 1940; 82,000 in 1941; 40,000 in 1942, and 58,000 in 1943. This year the number of trees delivered to Dunklin County farmers was 257,000.

The reason for this record 1944 program is that the early plantings have reached maturity and demonstrated their effectiveness. A severe sandstorm last year made believers out of many former scoffers. The fields with black locust windbreaks on the south and west sides practically escaped all damage. Unprotected neighboring fields of young cotton, corn and other growing crops were totally destroyed.

Windbreak rows must be planted against the prevailing winds on each forty-acre field to be fully effective. Two rows, with the trees spaced six feet apart, and the openings staggered, is the general practice. In six or seven years when the trees mature, there is opportunity to introduce additional vegetation in the form of red cedar, blackberries and other shrubs and vines to provide shelter and cover for quail and other farm game. Trees grow fast on rich lowland soil. At three years of age they top a man in height.

When possible, the farmers plant the trees as soon as they are delivered from the state nursery. The planting tool is a broad-bladed mattock, used to "scalp" away a square of turf which might otherwise smother the seedling, and to slit an opening for the young roots. When these are inserted the earth is carefuly tamped in.

If immediate planting is impractical, seedling trees are kept in live storage by "heeling in." This practice consists of spreading the young trees rather thickly at a sloping angle in a shallow trench which may be made by running a plow furrow along one edge of a field.

After only three growing seasons these plantings are able to prevent wind damage. After ten years of growth the windbreak rows may even need thinning. Cutting out alternate trees provides excellent fencepost material.

While black locust is not the ideal tree for all windbreak problems—in some areas other species are more suitable—it is fast growing in the southern lowlands and gives protection in the season when it is most needed. On prairie lands windbreaks are used primarily for winter protection of farm homes and livestock. For this purpose evergreens are generally preferred. Down in Missouri's "Bootheel," however, the winters are mild enough. It's the summer foliage of the locust which is needed and Dunklin County's experience with planted trees shows that they can do the job which is expected of them.

Black locust, alternately spaced six feet apart in two rows, is proving an effective windbreak in the lowlands

Three years after planting, this locust windbreak in Missouri protects a cotton field from sand and wind damage. Trees grow fast there

ADVENTURE WITH RACCOON

By SAM CAMPBELL

ON ONE of those mystic nights in June, when the forest world was swollen with life and there was lazy magic in the air, we stood at the door of our northwoods cabin looking out into the soft darkness. Through the forest drifted dainty mists, like the gossamer tresses of passing woodland spirits.

But while we were responsive to the poetic charm of this sylvan realm, our immediate attention was directed to something most tangible, solid—and beautiful!

Circled about a pan of food were five furry figures and on these were focussed our eyes, our thoughts and our hearts. It was an animated dinner party we looked upon. There was much milling about, considerable smacking of lips regardless of what etiquette might contend, and occasionally brief arguments when two would lay claim to the same morsel. In the faint light that shone from the cabin window on the five creatures it might have been difficult to identify them when their heads were buried in the shadow at the pan. But when the largest of the group lifted her head there could be no doubt. There were the unmistakable markings of the raccoon—a gray face with a black line across black beaded eyes, alert cupped ears, receding lower jaw, and a black nose that was incessantly moving and looked needlessly long. As she sat there she lifted a chosen bite with her front feet, and ate it in the manner we human beings once used before knives and forks cramped our style.

These were raccoon, and we knew well what particular ones they were. The large one was "Ruin," of the pair we called "Rack" and "Ruin," liberated in the forests two years before. With her were four infants but a few weeks old, and now obviously the object of her affection and concern.

The coming of these creatures that night was an outstanding event for us. Not that association with forest folk was anything new in our experience, however. Even while the raccoon continued at their banquet, "Salt" and "Pepper," our porcupines, and "Sausage," the friendly woodchuck, moved about the still shadows, indifferent to each other and unafraid of us. But there had been a problem placed before these raccoon and they had solved it. This summer season we had moved from our cabin on the mainland of our lake to a new one on an island. The 'coon had been accustomed to coming to that mainland cabin, and had never known us associated with any other place. We wondered much whether they would be inspired to find us at our new home. What message some passing breeze may have carried to them over that long stretch of water, or what their little-understood instincts may have whispered within their thoughts—these things we could not know. But through some urge from within, pull from without, or both, they had come to us, and we were deeply pleased.

Ruin seemed pleased, too, as we advanced toward her, talking our feelings in soft voices. But she quickly scattered her young ones in the surrounding brush. The wilderness mother instinct would not permit liberties with those sacred little ones, even though possibly she held happy memories of us. When the last of the young had melted into the darkness she stopped, faced us and came back with hesitating steps.

We moved toward her, but with high regard for wildlife etiquette. There is a way to approach kings, and a way to approach animals too. We knew of

Contrary to popular belief, the author found that raccoon do not always wash their food before eating it. They like to "dunk," however

the former only by report, but of the latter we speak from experience. Let there be no sudden move, no vulgar dash of impatience, nothing that challenges the glorious independence and freedom which is constitutional with these rugged individuals of the forest. Theirs is the divine right to accept or reject, to choose or refuse, and this not even our sometimes superior brutishness can banish. Cage the wild creature, rope him, pin him to the floor, yet the spirit of his independence lives on. Mentally he is never conquered. With every hope gone, every movement hampered, he uses his last inch of freedom to snap at the one who would restrain him. It is we who must make the advances, and in manners to their liking if we are to gain intimacy with them and a view of their world.

Hence, on that mellow night, we moved slowly toward our little friend.

His natural curiosity exceeds that of any other woodland creature

She stood watching our advance, hair-trigger in attitude, but obviously interested and wishing to renew to some extent our friendship. Time was when we would have picked her up and held her in our arms; but now she must think of the safety of her family, and besides there were long months in which she had known nothing of us.

We had seen Ruin, and her missing mate Rack, long before they saw us. Two years before, when they were brought to us, after a tragedy had taken their parents, their eyes had not yet opened. Rack was black, Ruin gray. We often recall how they would come creeping across the floor toward us at hunger time. They couldn't see us in those first days, but by the slightest sound they knew where we were. Their meals, bottles of milk, diluted, warmed, and with a bit of honey, were always smacking affairs. When they had taken on their fill—a quantity that amazed us—they would expect to be petted. We presumed that this was the period when a mother raccoon would have administered a tongue massage. While we made no effort to ape this routine, we did scratch their heads, necks and backs. Thereupon we would be treated to an extremely odd and original little expression of joy and gratitude. The 'coons would make two sounds simultaneously—one like the purring of a kitten, the other that *tch tch* which we human beings use when we wish to imply shame and disapproval upon the act of another. This dual tone was their song of contentment. It came only when every craving was satisfied, and they were ready for sleep.

We saw our little friends grow toward independence. When they were about the size of Ruin's babies brought to the island that night, they began actively investigating the woods. Their natural curiosity exceeds that of any other creature I have known. They were prying into all things about them continuously, not only with their eyes and sensitive nostrils, but more particularly with their remarkable front feet. These they use as hands, and feel into every nook and cranny, crack and crevice they find. The actual contact with an object by those feet seems to be immensely pleasing to them. Particularly fascinated were they by anything of unusual texture. A button, a large wood screw, an oddly shaped stone, a cork—all were most intriguing, and an old golf ball simply had them entranced. This ball Ruin would hold in her "hands," turning it around and around and around—apparently looking for some end to it. Occasionally she would drop it as if in hopelessness, only to race after it with renewed interest when it rolled away.

We watched closely their treatment of food, especially with respect to "washing" it. Our observations are inconclusive, except that we doubt that the act of dipping food in water is an effort on their part at what we human beings call cleanliness. It seems to be more the nature of "dunking." We noticed that food was eaten without dipping it fully as often as the other way. Certainly in all our experience with raccoon we have seen nothing to justify the general opinion that "they always wash their food before eating it." If washing is the aim, they certainly become very lax at times when the food being eaten is in greatest need of a good bath.

Rack and Ruin held staunchly to our friendship that first season. Although they grew in stature and strength, and took to the forest, we saw them often

The author recording the antics of "Rack" and "Ruin" in the Northwoods

and their greetings were affectionate. They foraged for their own food, and it would not be consistent with the prevalent shortages in newsprint to list the things they eat. Suffice it to say here that they will eat anything that flies, crawls, walks, or swims if it is smaller than they, and most vegetables, fruits and nuts as well. We gave them tasty bites occasionally as good will offerings, but not enough to make them dependent upon us.

We never found their home in "the deep tangled wildwood." No doubt it was in a well-chosen hollow tree somewhere in the immense forest back of our cabin. They came to us always in the middle of the night and thought nothing of it if their scratching on our screen door awakened us from happy dreams. In the light of the moon, or in the dark of the moon, they were awake and abroad—and they made certain that we were awake, too.

Rack, the male, was the larger and the call of the wild was strong in him. Even in that first season his visits were infrequent as autumn came on, and often Ruin came without him. Sometimes when she was in the house and the center of our attentions, we would hear him call out of the darkness. Would that men could learn the secret of his power—for immediately his mate would cease

whatever she was doing, and go to him.

We noted this masculine mastery in a little adventure which was priceless in its inferences. One day we planned a canoe trip which would have taken us away from our cabin for a few hours. Rack and Ruin had been particularly adhesive that morning, trailing at our heels constantly, and climbing up on us whenever we stood still long enough for them to get a foothold. It was in anticipation of some relief from this devotion that we walked out on our pier and stepped into our canoe. The raccoon were following at our heels, so we started paddling quickly, calling out an unheeded promise that we would be back soon. The two creatures reached the end of the pier, called to us, and then Rack, the venturesome, slipped into the water and swam toward the canoe. It was the first time he had been in the water, to our knowledge. On he came in masterly style, and we pulled him out, dripping and bedraggled, and set him where he could spray our coats as he shook the water off.

Ruin, however, could not find the courage to begin the swim. Water was still a stranger to her. She paced back and forth, calling constantly to Rack! He was answering her calls standing with his front feet on the canoe railing, and watching her anxiously. We were no longer anxious to get away, for here was adventure to our liking. We watched the animals closely from our drifting canoe. Rack continued calling in peculiar trills, but when it was apparent that Ruin would not respond, he went over the railing and into the water again, swimming back to her.

There was a greeting between the animals, then they walked at quick pace to the shore end of the pier, Rack showing the way. He led his mate into the shallow waters at the shore line. Here she entered with timid and hesitant steps, drinking of the water a bit as if testing it. For a few moments they seemed to be playing. Then of a sudden Ruin began swimming toward us, Rack following closely. Obviously this had been their plan. He had led her to a place where her fears would be diminished, and where she could get acquainted with water. After a few feet of swimming she seemed to lose her nerve and started to turn back. He headed her off and pointed her nose to sea again. A moment later she attempted to turn back again, but once more he headed her off. The two reached the canoe, and were lifted in. It made no difference if they showered our coats with their shaking, they had given us a priceless experience and we were all admiration. We took our canoe trip—and so did the raccoon!

In the second summer of their lives we saw Ruin frequently, Rack only once. She came nightly to the feeding station under our mainland cabin. No longer did she wish to enter the house, no longer to be taken in our arms. A long winter of difficulties had influenced her thoughts and interests. But she would come to us—particularly when that year's edition of five babies were dispersed back into the darkness. Perhaps

(*Turn to page* 362)

CANADA'S POSTWAR CONSERVATION PLAN

By CLARK DARGAVEL

CANADA'S charter of conservation is drafted and within months the provincial and federal governments will be asked the $64,000,000,000 question: are you going to conserve?

The charter is the contribution of Canadian experts picked to be members of the subcommittee on conservation and development of natural resources of the federal committee on reconstruction.

Urgency keynotes it. Every section of the report stresses *now* is the time. It makes clear that unless adequate precautions are taken now, much of Canada's natural wealth will rapidly disappear.

The central committee on reconstruction has the task of finding postwar employment for the 1,800,000 now in the armed forces and in war industry. The subcommittee on conservation has warned the central committee that extensive preparations must be made long before the war ends if a substantial number of these people are to be diverted into a vast conservation and development program.

Three major steps are recommended: A corps of supervisors and instructors—men trained in the work of conserving and developing resources—must be set up. Men with adequate training are available in "totally insufficient numbers" now. Federal and provincial governments, the affected industries, and the universities must cooperate to train these men now.

Surveys must be instituted. "If postwar plans are to be based on adequate data, the need for surveys, aerial, topographical, geological, forest, wildlife, fisheries and soil, is urgent."

Regional committees must be set up of experts and responsible government officials to consider the "combined contribution" that resources in any region can contribute.

These, and other recommendations, will be placed before a conference of representatives of the Dominion and the provincial governments during the next few months. The chances for favorable action toward implementing this charter of conservation are better than ever before.

In the forestry field alone, there have been demands from coast to coast for protection and more intelligent use of Canada's timberlands. Provincial inquiries have been held and demands made for action.

The insatiable demands of war for timber and more timber have brought public awareness of a heavy drain on forest capital built up over the centuries.

The necessary foundation for cooperation by the federal government in these activities is contained in two bills proposed by the subcommittee for enactment by parliament at this session, one the forest resources rehabilitation act, and the other the dominion forest act.

The first would provide for training 15,000 men annually for five years in forestry; would authorize dominion-provincial agreements for forestry activities; would provide for forestry apprenticeship schemes and for university training for forestry men; and would provide for $100,000,000 to be expended for this purpose.

The second act would provide the Dominion Forest Service with adequate staff, wider responsibilities in operating forest experiment stations and forest products laboratories; and would provide for agreements with provinces, universities and industries for forestry research work, and for federal contributions toward provincial work in protecting forests.

The program the experts have outlined is, to a country that has neglected conservation work for two generations, an ambitious one, but Canadians today are aware that the continued prosperity of her forest industries is essential to Canada's well-being.

Fifty-eight percent of the land area in the nine provinces is forested. In 1941, forest industries employed almost a quarter of a million persons, supporting directly well over twenty percent of the dominion's population. The net value of the products was $537,000,000 and, as forest industries export the bulk of their production, it provided a credit balance of over $350,000,000.

INTERNATIONAL

FULL DIESEL Performance

Begins with *Easy Starting*

Simple, Dependable Gasoline-Conversion Starting System Makes INTERNATIONAL DIESELS as Easy to Start as Gasoline Engines

THE starting system on a Diesel engine is mighty important. Time lost in starting delays the job and eats up profits.

International Harvester has given quick all-weather Diesel starting the prominence it deserves by engineering it into International *full Diesel engines* as a basic, inherent feature—not merely as an independent after-thought!

International full Diesel engines have an in-built gasoline-conversion starting system that has proved its superiority again and again by the ease and rapidity with which operators get International Diesels at work in winter as well as summer.

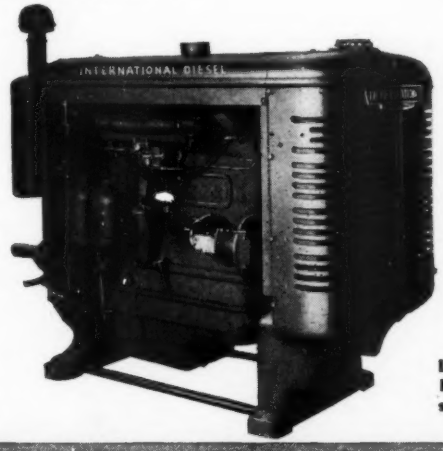
International's system for quick, dependable starting warms the inside of the engine cylinders by direct flame. The engine runs at sufficient speed to take complete advantage of compression heat when changeover to full Diesel operation is made.

International performance begins with *easy starting* and carries right through to the end of the job. Ask the nearest International Industrial Power distributor for the full story about availability of new engines for jobs vital to the war effort, job applications, service facilities and replacement parts.

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

Here's how the simple starting system on International *full Diesels* works: By merely pulling back lever (1) until it latches, the operator does four things: (a) Opens starting valves (3), reducing engine compression ratio from approximately 14:1 to 6½:1; (b) Energizes previously isolated spark plugs (5) in auxiliary chambers (4); (c) Opens gasoline shut-off valve in carburetor (8); (d) Closes valves (6), shunting air from air cleaner as indicated by arrows (9) through carburetor (8) past regular intake valves into engine combustion chambers.

The engine is now started in the coventional way either by hand cranking or low-voltage electric starter. After a brief direct-flame cylinder warm-up, the operator converts the engine, which is then running at 800 r.p.m. or faster, to full Diesel operation (position shown) by simply tripping lever (1).



Left: International UD-14 *full Diesel* Industrial Engine showing starting system, carburetor and magneto.

INTERNATIONAL POWER UNITS

Tree Trails . . .

Across America in Search of the Rare and Unusual

By W. D. PORTER

IT WAS man's infernal and eternal hunger that led us there—led us to the largest *Pinus flexilis*, or limber pine, on record. I say it's the largest until somebody with good proof challenges my statement.

To find out if we had really made a discovery that is worthy of the record book, we searched through all the figures on the largest trees known in the various species and, sure enough, our "hunger strike" topped the limber pine measurements listed by the authorities.

It all happened without previous preparations—just accidental, you might say. Sedentary routine becomes dreadfully monotonous, especially when the person living the sedentary life has been reared on action in the great out-of-doors. And especially when it's February and the winter had thrown up a cloud screen for months before the sun and had made a good job of keeping Old Sol from showing his face for more than a few minutes at a time. So, to break up the monotonous formation of our routine, Orville S. Lee of Paradise, Utah, and I threw our snowshoes and cameras into his coupe and hied ourselves along Highway 89, to the pass on the Wasatch Range between Cache Valley and the beautiful Bear Lake country—at an elevation of 7,800 feet and about thirty miles east of the Utah State Agricultural College at Logan.

Our destination had not been decided on before we left. Even as we "mushed" along with snowbanks rising high above the car from the activities of a snow plow, we didn't know just where we were going to alight and begin some sort of an adventure. But as we reached the summit of the pass and looked off to the right and saw a likely smooth, sparkling gradual slope, we began to have ideas.

We found a niche in the bank of snow just large enough to allow us to park the car. Then we fitted our snowshoes and took to the deep snow that measured in several places on the level well over six feet. How exhilarating! To breathe that fresh crisp mountain air—to walk leisurely among the firs, spruce and limber pines is a pleasure that cannot be described adequately.

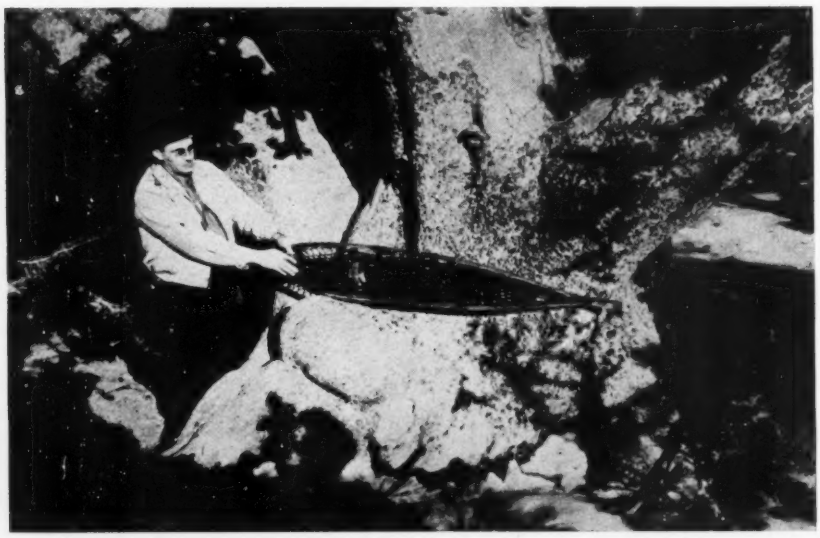
Wild animal tracks crossed our uncharted course; hawks soared effortlessly overhead; two army bombers droned in the blue to the north; and we stopped from time to time to laugh at the peculiar markings we had made with our snowshoes on the zig-zag course we had taken. We followed this ridge and that hollow, weaved in and out among the trees and shrubs and wondered why we hadn't saved more of our "A" ration coupons for future unassigned pilgrimages.

But there comes a time in every man's life when he must call in the ramblings of his mind and harken to the rumblings of his stomach. We, like Napoleon's men, march or climb on our stomachs. My father used to tease me when I got hungry in the hills. He'd say, "My boy, you shouldn't get hungry—why, you ought to get filled up on mountain scenery and wind pies." I've tried it many times, but that eternal gnawing always overcomes any willpower that I might have mustered in anticipation of such internal attacks. And so it was after a few hours of trying to satisfy our appetites with mountain scenery and wind pies, that we began to give way to the overpowering pangs of hunger. Then it happened!

We saw what we thought to be a cluster of trees on the crown of the ridge, and the depression in the snow told us that there was dry ground at the base of the "clump." Upon arriving at our chosen retreat we dropped down from an eight-foot snowbank and found that the "clump" of five trees was one huge limber pine. At first we couldn't believe our eyes. But careful investigation revealed that all five branches emanated from one trunk. Hunger had driven us there, but for once, curiosity superseded stomach-gnaws and we set about making measurements. We sensed that this was the grandpappy of the species—but we wanted to make sure. With a metal tape we took the circumference measurement at breast-height. It was twenty-four feet five inches. Then we took a few more measurements and pictures, marvelled at our find, and appeased our appetites.

Foresters are versed in the tales of Paul Bunyan. They hear so many tall ones that they are usually ready to put two grains of salt along with any reports they hear of anything in the forest that

(*Turn to page* 362)



King of the limber pines, discovered in the Wasatch Range of Utah

PLANNING OUR FUTURE FORESTS

We believe that the time has arrived when it is economically feasible for us to engage in growing crops of trees for commercial use on the long time basis required for such a program.

The States of Idaho, Oregon and Washington have adopted what we consider to be workable taxation principles relative to the long time requirements of new timber growth.

Those states and their citizens have developed an attitude toward the growing of timber by private enterprise which, when coupled to aggressive fire control programs of the public and private forest owners, now offers reasonable assurance that new timber crops can be carried to maturity without excessive losses from fire.

With faith in the fairness of the electorate of those states in maintaining reasonable forest taxation, and with the conviction that the public and forest industry can and will reduce forest fire losses to a minimum, we are adjusting our plans as rapidly as possible to place our wood pulp and lumber manufacturing operations on a continuous and perpetual operating basis.

WEYERHAEUSER

PARK SERVICE STATEMENT ON JACKSON HOLE MONUMENT

BECAUSE of the controversial nature of H. R. 2241, to set aside the President's Executive Order creating the Jackson Hole National Monument in Wyoming, Representative John J. Cochran of Missouri, member of the House Committee on Wildlife Conservation, recently directed numerous questions concerning the monument and its creation, under the Antiquities Act of 1906, to the National Park Service, Department of the Interior, which maintains that establishment of the monument is being misrepresented by opponents of the action. In the interest of giving the facts as presented by the Service, its reply to Congressman Cochran's questions follows:

1. *What is Jackson Hole National Monument?*

Jackson Hole National Monument is a federal reservation comprising 173,065 acres of federal land in the northern portion of Jackson Hole, a spectacular valley on the headwaters of the Snake River in northwestern Wyoming. It adjoins Grand Teton National Park.

2. *Under what authority was this national monument created?*

On March 15, 1943, the President issued a proclamation reserving these lands under the authority of Section 2 of the Act of June 8, 1906 (34 Stat. 225), which is as follows: "That the President of the United States is hereby authorized, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected: *Provided*, That when such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tract, or so much thereof as may be necessary for the proper care and management of the object, may be relinquished to the government, and the Secretary of the Interior is hereby authorized to accept the relinquishment of such tracts in behalf of the Government of the United States."

3. *Why was Jackson Hole National Monument established?*

"To conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." (The purpose of national monuments as defined by Congress in the Act of August 25, 1916.)

Jackson Hole is well known as one of the most beautiful valleys in America. Its abundant plant and animal life, as well as its geological formations, give it great scientific interest. It is an important part of the wintering grounds of the largest elk herd in the United States. It has long been an historic landmark. . . .

The monument includes the minimum necessary for the proper care and management of the northern portion of Jackson Hole, which is to be preserved in its natural and unspoiled condition. The southern portion, where the best ranch lands are situated, is not included.

4. *Was the creation of Jackson Hole National Monument in accordance with established precedent?*

Every President since the passage of the Act of June 8, 1906, known as the Antiquities Act, has established national monuments under the authority of that Act, a total of eighty-two having been thus created. . . .

5. *Has the Supreme Court ever rendered an opinion concerning the establishment of a national monument under the authority of the Act of June 8, 1906?*

Yes. After President Theodore Roosevelt created the first Grand Canyon National Monument in Arizona, containing 806,400 acres, the legality of the monument was contested on the grounds that the area did not qualify for monument status under the Antiquities Act, and that the President had acted without authority in setting it apart as a national monument. In 1920, the Court rendered its opinion (252 U. S. 450):

"The defendants insist that the monument reserve should be disregarded on the ground that there was no authority for its creation. To this we cannot assent. The act under which the President proceeded empowered him to establish reserves embracing 'objects of historic or scientific interest.' The Grand Canyon, as stated in his proclamation 'is an object of unusual scientific interest'."

6. *Was the creation of this national monument an infringement upon the rights of the state, the county, or any individual?*

The proclamation establishing the monument reserved only the federal lands within the described boundaries and it was issued subject to all valid existing rights. Certain private and state lands are also within the described boundaries, but these lands are still in private and state ownership, and the rights of the owners are the same as they were before the proclamation was issued. The private lands can be acquired only by donation or by purchase with funds appropriated by the Congress. They cannot be acquired by condemnation unless Congress appropriates the funds therefor. The state lands may be exchanged for federal lands of equal value outside the monument, if the state so wishes. No lands have been confiscated, no citizens dispossessed, and private property and income within the monument is subject to taxation as it was before the monument was established.

7. *Who owns the lands within the described boundaries?*

Federal land and water, 173,064.62 acres, or 77.6 percent; land purchased by John D. Rockefeller, Jr., to donate to the Federal Government, 33,559.89 acres, or 15.1 percent; remaining private lands, 14,937.16 acres, or 6.7 percent; state school lands, 1,367.32 acres, or .6 percent.

The federal land and the land purchased by Mr. Rockefeller to donate to the Federal Government comprise more than ninety-two percent of the total area within the described boundaries.

8. *For what have these lands been used?*

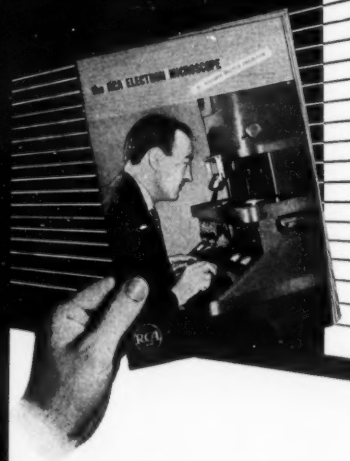
About 8,000 acres within the monument boundaries are under cultivation, of which 2,500 acres are irrigated. About 54,000 acres are subject to grazing by about 6,300 head of cattle during varying portions of the year, of which 4,000 head of cattle require summer range on the adjoining national forest. The timber within the monument has certain local uses but is not considered to be of commercial significance. The area has been used principally for recreation and wildlife conservation.

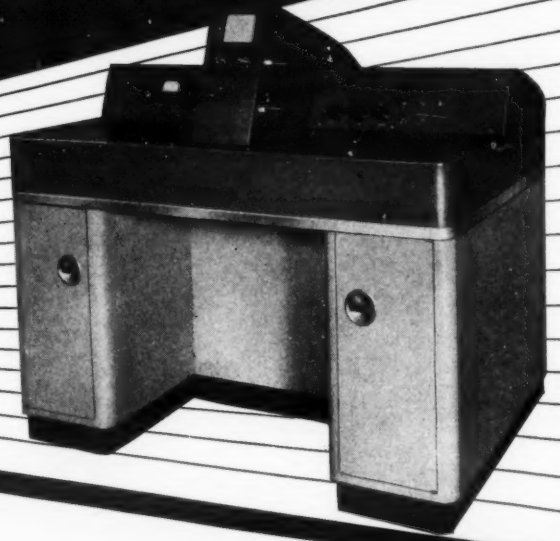
9. *How does the creation of the monument affect livestock grazing?*

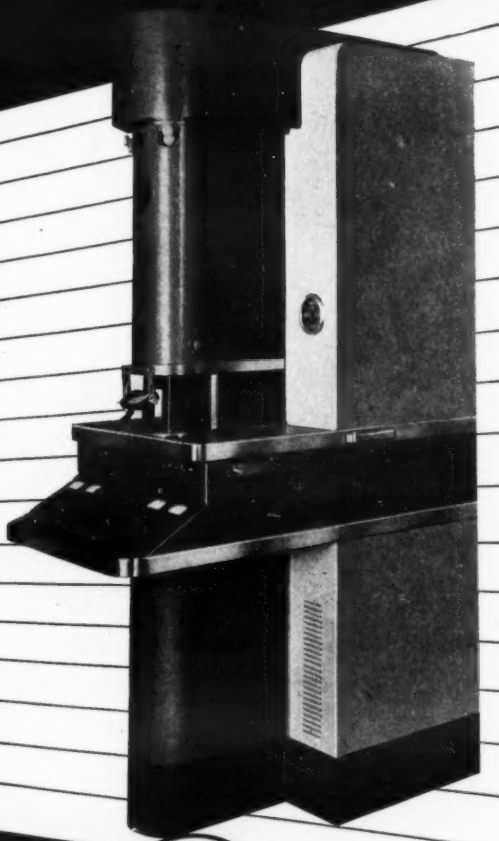
On April 8, 1943, the Secretary of the Interior, who is charged with the administration of the monument, issued an administrative policy statement from which the following is quoted: ". . . all permits issued by the Forest Service or other federal agencies for use of lands not within the national monument will be honored by the National Park Service during the lifetime of the present holders, and the members of their immediate family."

When the Secretary of the Interior testified before the House Public Lands Committee, he amplified his position concerning grazing within the monument, as follows: ". . . In order to show how completely we desire to protect the interests of those few individuals who have some 6,300 head of cattle and horses grazing in this area, I am willing . . . to support a measure which has been suggested to me whereby those who own

HOW CAN THE RCA ELECTRON MICROSCOPE HELP YOU?







The RCA Electron Microscope, an instrument which magnifies up to 22,000 times (and makes micrographs which, enlarged photographically, make possible useful magnifications up to 200,000 times), has enabled scientists to achieve important advances in industry and research. Its tremendous magnifying power is of great value to the chemical, metallurgical, ceramic, plastic, aviation, textile, rubber and petroleum industries—or to any field where particle size, shape, structure or distribution are of interest, or where minute surface details of metals or other materials must be studied.

Two new models of the RCA Electron Microscope are now available. One is a compact desk model—the other, a new Universal type containing an electron diffraction camera. Information on these instruments, their use and applications, is offered in a new 16-page booklet "The RCA Electron Microscope." The coupon at the left will bring you this booklet by return mail.

Please Use This Coupon

Electron Microscope Section, Dept. 119
Radio Corporation of America, Camden, N. J.

Please send me the new bulletin entitled "The RCA Electron Microscope."

Name.....

Position.....

Company.....

Street..... City.....

BUY MORE WAR BONDS

RCA

RADIO CORPORATION OF AMERICA

RCA VICTOR DIVISION · CAMDEN, N. J.

LEADS THE WAY... *In Radio... Television... Tubes... Phonographs... Records... Electronics*

THE FOREST RESOURCE APPRAISAL

Fact-Finding Survey to Determine the War's Effect on the Forests of the United States Now Underway!

TO PROVIDE A BASIS for informed postwar handling of one of the country's most important natural resources, The American Forestry Association has initiated a fact-finding survey to determine what effect the war is having upon the country's forests and forest lands and what will be their condition when the manifold problems of reconstruction are at hand.

The project is a broad cooperative undertaking in which all interested individuals and agencies are invited to join. Its overall objective is to have available at the war's end down-to-the-minute facts as to the forest situation, upon which public and industrial policies of forest conservation, management and land economy can be based.

Public-spirited citizens, industrialists and organizations alert to the need of forest conservation and development in postwar economy have made the survey possible by underwriting more than four-fifths of its estimated cost of $250,000. The Association is now engaged in raising the balance.

Let's make it a joint undertaking. The Association offers you this opportunity. As of June 20, the list of contributors includes 24 Conservation and Trade Associations; 94 Industrial Companies; and 322 Individuals. We invite your help in the financing. Do it now with a cash contribution, a pledge, or, during the Fifth War Loan, buy a Series F or G War Bond in the name of The American Forestry Association and mail it to us.

THE AMERICAN FORESTRY ASSOCIATION
919 17th Street, N. W.
Washington 6, D. C.

A Project of
THE AMERICAN FORESTRY ASSOCIATION

lands within the monument, appurtenant to which are grazing rights on public lands within the monument, can be assured that they and their heirs and assigns will be protected in these rights so long as they own lands within the monument . . . The rights of those cattlemen who have ranches outside of the monument but who have crossed the area for years to reach their present summer range in the national forest will be continued. . . ."

10. *How does the creation of the monument affect the country tax structure?*

The Teton County treasurer reports that the county's average annual income for the years 1940, 1941 and 1942 was $132,052. The average annual county tax revenue from Mr. Rockefeller's lands is a little less than $10,000, which he has paid ever since he bought these lands fifteen years ago to donate to the public and is still paying, pending the enactment of legislation by Congress to authorize some suitable compensation to Teton County when these lands are transferred to the Federal Government and are removed from local tax rolls. . . .

Congress has already authorized annual payments to counties from the income from national forests, grazing districts, wildlife refuges and other federal conservation lands. The proposed legislation would authorize the counties to share similarly from the national parks and monuments.

11. *What is the origin of the Jackson Hole National Monument Project?*

Mr. Rockefeller became interested in acquiring private lands in the northern part of Jackson Hole, to donate to the American public, in response to the pleas of Jackson Hole residents that a portion of that great scenic valley be preserved for public enjoyment. The boundaries of the monument are essentially those presented to a Special Wildlife Committee of the Senate by a group of Jackson Hole citizens in 1930. . . .

12. *What action has Congress previously taken regarding the Jackson Hole Project?*

Prior to the consideration of the Barrett Bill (H. R. 2241) this project has been investigated on the ground by numerous congressional committees and none of those committees had rendered adverse reports. In 1934, a bill to add the Jackson Hole area to Grand Teton National Park passed the Senate, and was reported favorably from the House Public Lands Committee on the last day of that session. The House Committee report contained a provision asked by the Bureau of the Budget that precluded the possibility of compensating Teton County for loss of taxes which would result from removal of private lands in the monument from local tax rolls.

★ NUMBER 8 IN A SERIES, TRACING FIFTEEN YEARS OF KELLETT AIRCRAFT HISTORY ★

Planning for Tomorrow

THE photograph above shows an earlier Kellett development, a military-type autogiro, undergoing tests by the Army Air Forces.

For many years, aeronautical engineers have strived to develop aircraft able to take off or land vertically on any kind of field or flat roof, and to climb handily over usual flight obstructions . . . aircraft that can cruise smoothly at satisfactory speeds, or hover motionless.

During the war, all available materials and manpower are required for military needs. But the growing Kellett engineering staff looks forward to peace, and the opportunity to focus its aeronautical design abilities on helicopter developments for a wide range of contributions to American progress.

Indications are that modern aircraft of the helicopter type will then save time and money in forestry service, ranching, dusting and spraying agricultural crops, patrolling and inspecting cross-country power lines and oil pipe lines, in prospecting—and many more everyday services. Kellett Aircraft Corporation, Upper Darby (Philadelphia), Pennsylvania.

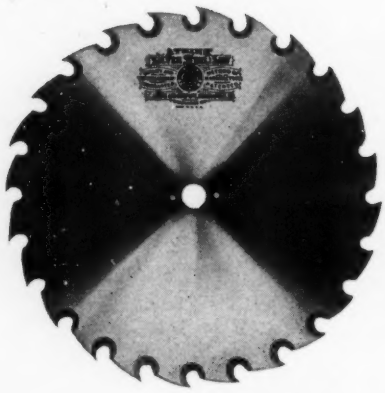
KELLETT

OLDEST ROTARY WING AIRCRAFT MANUFACTURING COMPANY

ATKINS

INSERTED TOOTH CIRCULAR SAWS

LOW COST, HIGH SPEED CUTTING *The Year Around*



● For a saw that will give you exceptional service the year 'round—that will handle very hard or gritty timber—Atkins Inserted Tooth Circular Saws are unexcelled. Blades of tough, strong, tension—holding Silver Steel; accurately milled tooth sockets; finest quality inserted teeth are the combination that spell "economical sawing". Available with various types of inserted teeth and holders for different kinds of work. Full information is available on request.

Send for Mill Saw Catalog.

E. C. ATKINS AND COMPANY
413 S. Illinois St., Indianapolis 9, Indiana

Agents or Dealers in All Principal Cities the World Over

Silver Steel SAWS

I. F. Eldredge Retires; C. R. Lockard Named to Direct Southern Forest Survey

INMAN F. ELDREDGE, pioneer southern forester, and since its inauguration in 1932 director of the Southern Forest Survey, will retire on June 30. He will be succeeded by C. R. Lockard, assistant Survey director for the past two years.

A native of South Carolina, Mr. Eldredge entered the U. S. Forest Service in 1905, a product of the Biltmore Forest School. After several years of service in the West, he returned South, in 1909, to organize and develop the Choctawhatchee and Ocala national forests. During this period he developed and put into practice a method of conservative turpentining now generally used throughout the naval stores belt. Following service as company commander with the 10th Engineers (Forestry) during World War I, he returned to the Forest Service as chief of forest management in the eastern region. Several years later he was appointed to the staff of the Chief Forester at Washington as forest inspector of management and timber sale work in all national forests.

I. F. Eldredge

In 1926 he resigned to manage the Suwanee Forest of the Superior Pine Products Company in Georgia, an industrially owned and operated forest of 200,000 acres in the longleaf pine region. After six years of experience in the production of naval stores, lumber and other wood products, he accepted an invitation to return to the Forest Service to head up the newly-launched Forest Survey of the South's timber resources. As he approaches retirement he is chief of the field division on the staff of the Southern Forestry Experiment Station at New Orleans, in charge of the Forest Survey, economic research, and the prosecution of requirements and supplies surveys for the War Production Board in the lower South.

Mr. Lockard received his B.S. degree in Forestry from the New York State College of Forestry in 1923, and his M.F. degree from Harvard University in 1924. He served with the Forest Service in Oregon through 1925 before becoming New England forester for the Diamond Match Company, carrying on research on the company's cutover lands and participating in the appraisal and purchase operations of timber in that region. From 1930 to 1935 he served as assistant state forester of Vermont, working on the development and administration of a comprehensive state forestry program. Following this he was appointed regional forest technician in the New England division of the National Park Service, and shortly thereafter became forest economist for the Northeastern Forest Experiment Station at New Haven, Connecticut. In 1924 he was assigned to the Southern Forest Experiment Station on the staff of the Forest Survey as assistant to Mr. Eldredge, working chiefly on products requirements and supplies surveys for the WPB.

C. R. Lockard

Spruce Project Liquidated

THE Alaskan spruce project, undertaken during the 1942 emergency by the U. S. Forest Service to supply from the Tongass National Forest high grade Sitka spruce for warplane production, is now in process of liquidation. The reason given is that the emergency has passed and present demand for aircraft spruce stock does not justify continuance of the operation. All logging activities will end around July 1.

Approximately 80,000,000 board feet of timber was cut on the Tongass operation. Of this, around 40,000,000 feet was high grade aircraft stock delivered to mills on Puget Sound. The remainder was low grade spruce and hemlock for general military use in Alaska.

New Forestry Foundation

THE Massachusetts Forest and Park Association has hit another bullseye. It has raised over half the funds necessary to start the New England Forestry Foundation, which it sponsored.

The fundamental purposes and methods of operation of the Foundation are set forth clearly in a prospectus issued by the association. The sole purpose is to place all forests in New England under good management, thus restoring these forests to their highest productiveness. It proposes to make forestry pay its way, certainly in New England. Organized as an educational, non-profit institution, the Foundation will be a separate corporation under the sponsorship of the Massachusetts Forest and Park Association.

It will use all of its net earnings and gifts in the restoration and improvement of forests, offering forestry service at actual cost to woodland owners throughout the region. Where desired, it may take over actual management of forest properties. It will also own and manage forest lands—and pay local taxes on its lands. It will work with other owners on a cooperative basis in operation and marketing. The Foundation will be managed by a board of directors, chosen by the contributors. It will employ at least one forester.

The association estimates that $125,000 is necessary to start the Foundation on its way. Over half of this has already been pledged in funds and services.

The Massachusetts Forest and Park Association was organized back in 1898. Old-timers will recall that it started practical forest fire research a quarter century ago in its Cape Cod forest fire prevention experiment. It has played an important role as an initiator in many national forestry and conservation movements.

You Can Stop Fires Fast
with clear water

INDIAN FIRE PUMPS

Letters Like These are Our Best Advertisements

D. B. Smith & Co.
Utica, N. Y.

Our department has 6 INDIAN FIRE PUMPS and all the firemen are well pleased with them. Since equipping with INDIANS, we have discarded our soda acid extinguishers. When called out to a fire the first thing the men grab hold of are your INDIAN FIRE PUMPS and they certainly *DO A SWELL JOB.*

Yours very truly,
Natrona Volunteer Hose Company

D. B. Smith & Co.
Utica, N. Y.

Kindly send us 2 more INDIAN FIRE PUMPS. During the early Spring the weather was very dry and our department became well acquainted with our present INDIAN FIRE PUMPS as we had a great many prairie fires. Please hurry these 2 along.

Lake Bluff Fire Department

CATALOG CONTAINS MORE LETTERS LIKE THESE

We receive hundreds of letters like the above. INDIAN FIRE PUMPS, using only clear water, are the fastest way to extinguish INSIDE and OUTSIDE fires in their early stages. Order now or send for new descriptive catalog.

INDIAN FIRE PUMPS ARE MADE BY
D. B. SMITH & CO., 405 MAIN ST., UTICA 2, N. Y.
Pacific Coast Branches:
HERCULES EQUIPMENT & RUBBER CO. 435 Brannan St., San Francisco, Cal.
ROY G. DAVIS CO. CARCO-CONWHIT CO. THE CONWHIT CO.
617 E. Third St., Los Angeles 13, Calif. 320 SW Pine St., Portland 4, Oregon Klamath Falls, Oregon
MILL & MINE SUPPLY CO. 2700 4th Ave., South, Seattle, Wash.

ELEMENTS OF AERIAL PHOTOGRAMMETRY, by Earl Church, Syracuse University Press, Syracuse, New York. 95 pages, illustrated. Price $2.00.

The world is becoming, to use the newspaper phrase, more and more air-minded. One rapidly expanding field of usefulness of the airplane is in the taking of photographs, which can be used by military men, engineers, land planners, and foresters to obtain data for their various purposes. Alas, however, as many have discovered, an air photograph is not a map; distances as scaled on a picture do not necessarily correspond to those on the ground.

Anyone desiring to work with air-photos needs to know some of the simple facts regarding these distance distortions before he can use air pictures successfully. These are discussed by Professor Church. Foresters are rapidly turning to the air for forest mapping purposes. This book will be usful to them in getting oriented to their new medium.

If you do not happen to know, photogrammetry is defined as "the science of surveying or map making by means of taking measurements from photographs."

THE OUTDOORSMAN'S COOKBOOK, by Arthur H. Carhart. Published by Macmillan Company, New York. 211 pages, illustrated. Price, $1.95.

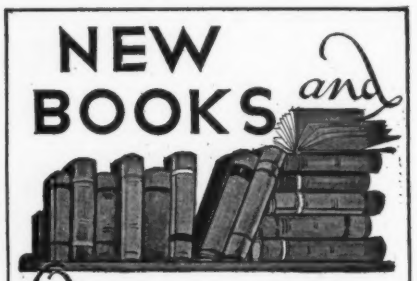
To the outdoorsman who wants to cook for himself and enjoy the results, this book is a real discovery. It has everything—complete, nutritious menus; provision lists; how to pack and care for food; camp cooking equipment from the minimum one-man back-pack mess kit to basic utensils for a shack camp. Every detail of preparing food in the open is discussed, including the type of stove to use; favorite camp dishes of well-known outdoorsmen are given, as well as excellent recipes for cooking meats, fish, stews, chowders and soups; vegetables and fruits; breads and biscuits; desserts and beverages. A special chapter is devoted to edible vegetables and fruits from the wild.

Here is a book for everybody's camp kit.

ASHEVILLE, IN THE LAND OF THE SKY, by Martha Norburn Mead. Published by the Dietz Press, Richmond, Virginia. 188 pages, illustrated. Price, $3.00.

This is a human story of the Great Smoky Mountains and the City of Asheville from the days of the Cherokees up to the present time. Famous "Biltmore," the Vanderbilt estate, is treated in detail in both text and photographs and its influence evaluated.

A thoroughly informative and valuable book for those interested in the Land of the Sky.



A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

FORESTRY TERMINOLOGY, A Glossary of Technical Terms used in Forestry, compiled and edited by Committee on Forestry Terminology, Ralph C. Hawley, Chairman. Published by the Society of American Foresters, Washington, D. C. 1944. 84 pages. Price $2.00.

Every profession develops its own vocabulary, much of which is unintelligible to the rest of the world. Foresters in this respect are like other professionals. Sometimes they develop their professional language by attaching special meanings to common words, as "mean sample tree." Sometimes they invent fearsome Greek derivatives of which the Greeks never dreamed, as "dendrograph." Again they give very informal lumberjack terms like "catface" and "go-devil" full professional standing.

The language of a rapidly growing profession tends to get out of hand every decade or two. For some years past, not even the foresters themselves are sure what they mean by some of their own terms. For example, "selective cutting" seems to mean whatever the individual forester thinks it ought to mean.

A few years ago, the Society of American Foresters appointed a committee of some sixty members to compile a glossary of forestry terms. The present volume is the result of the work of this committee, chairman of which was Professor Ralph C. Hawley of the Yale Forest School. Probably no forester will approve of all the nearly 3,000 terms listed. Some will think there should have been many more terms; others many less. Nor will any of them approve all the definitions listed. Nevertheless the glossary meets a long-felt need both inside and outside the profession.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

Wartime Handbook for Education. National Education Assn., 1201 Sixteenth Street, Wash., D. C. 15 cents.

District of Columbia—American Recreation Series. Bacon & Wieck, Inc., Northport, L. I., N. Y.

Conservation Commission of West Virginia—Annual Report. Commissioner of Conservation, Charleston.

The Ivory-Billed Woodpecker, by James T. Tanner. National Audubon Society, 1006 Fifth Avenue, New York, N. Y. Price $2.50.

Florida Farm Forestry. Bull. 14, Florida Forest and Park Service, Tallahassee.

Forest Trees of Texas—How To Know Them. Bulletin 20 (revised) of the Texas Forest Service. A. & M. College, College Station, Texas. Price 15 cents (10 cents in quantities of ten or more).

Forest Statistics for Lane County, Oregon. Pac. Northwest For. Expt. Sta., 423 U. S. Court House, Portland 5, Oregon.

North Carolina Forest Resources and Industries, by J. W. Cruikshank. Misc. Pub. No. 533, For. Serv., U.S. D.A. Supt. of Docs., Wash., D. C. Price 25 cents.

Establishment, Development and Management of Conifer Plantations in the Eli Whitney Forest, New Haven, Connecticut, by Ralph C. Hawley and Harold J. Lutz. Bull. No. 53, Yale University. Yale Univ. School of Forestry, New Haven, Conn. Price $1.00.

Management of Jack Pine Stands in the Lake States, by F. H. Eyre and Russell K. LeBarron. Tech. Bull. No. 863, For. Serv., U.S.D.A. Supt. of Docs., Wash., D. C. Price 15 cents.

Snow Surveys and Irrigation Water Forecasts for Columbia Basin and Adjacent Coastal Areas. Soil Cons. Serv., U.S.D.A. Idaho Office, P.O. Box 835, Boise, Idaho.

Forest Resources of Oregon. Published by Oregon State Board of Forestry, Salem, Oregon.

Transactions of the Eighth North American Wildlife Conference, edited by Ethel M. Quee. American Wildlife Institute, Investment Bldg., Wash., D. C. Price $1.00.

Hearings of Select Committee on Conservation of Wildlife Resources, House of Reps., 78th Congress, Pursuant to H. Res. 20. Supt. of Docs., Govt. Ptg. Office, Wash., D. C.

Reproductive Habits of Douglas-Fir, by Leo A. Isaac. Published for the U. S. Forest Service by the Charles Lathrop Pack Forestry Foundation, 1214 Sixteenth Street, N. W., Wash., D. C.

CONSERVATION CALENDAR

Important Bills in Congress With Action

May 18-June 5, 1944

Bills Enacted

S. Res. 293—CLARK, Missouri—Continuation of Special Committee on Conservation of Wildlife Resources and authorizing the expenditure of $6,500 in addition to the amounts heretofore authorized for such purpose. Resolution agreed to on May 23, 1944.

S. Res. 294—MCCARRAN—Providing $10,000 additional for use of Special Committee Investigating Use of Public Lands. Resolution amended and agreed to on May 23, 1944.

S. 1618—THOMAS, Utah—To amend the acts of August 26, 1935, May 11, 1938, June 15, 1938, and June 25, 1938, which authorize the appropriation of receipts from certain national forests for the purchase of lands within the boundaries of such forests, to provide that any such receipts not appropriated or appropriated but not expended or obligated shall be disposed of in the same manner as other national forest receipts, and for other purposes. Passed Senate March 14, 1944. Passed House May 15, 1944. Approved by the President May 26, 1944. Public Law No. 310.

H. R. 3848—RANDOLPH—To amend section 9 of the act of May 22, 1928, authorizing and directing a national survey of forest resources. Passed House April 20, 1944. Passed Senate May 25, 1944. Approved by the President May 31, 1944. Public Law No. 321.

Appropriations

H. R. 4443—TARVER—Making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1945. Passed House March 24, 1944. Amended and passed by the Senate May 17, 1944. In conference.

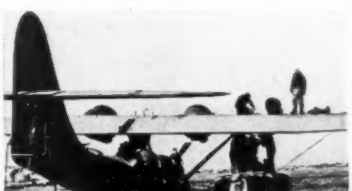
H. R. 4679—JOHNSON, Oklahoma—Making appropriations for the Department of the Interior for the fiscal year ending June 30, 1945. Passed House April 27, 1944. Amended and passed by the Senate May 23, 1944. In conference.

Research

H. R. 4866—MRS. SMITH, Maine—To provide for the establishment and maintenance of forest products pilot plants, and for other purposes. Introduced May 23, 1944. Referred to the Committee on Agriculture.

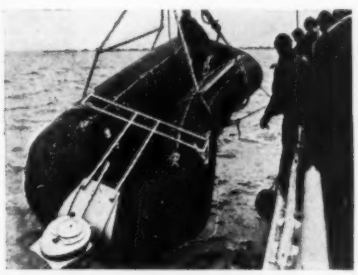
...Two TIN FISH FOR TOJO!

Until it is slammed straight for the belly of a frantically twisting, dodging Jap ship, a Navy aerial torpedo should be handled with care! And that is the way this deadly pair, cradled one over the other in a huge rubber barge, is being transported. In rearmament service these big rubber boats provide their lethal loads with a "safety zone"...a plump cushion of air that completely surrounds the cargo, safeguarding it against the danger of shock or collision. Many Evinrudes are used in such service, providing capable driving power and a high degree of maneuverability.



2 **Up she comes,** the day's work done! This photo shows the type of bracket widely used for mounting an Evinrude on a large rubber boat. Evinrude has developed many special mounting brackets to meet the varied needs of small craft used by the Army and Navy.

1 **Servicing Seaplanes** is another job for which rubber boats are ideally adapted. For powering big rubber boats, Evinrude now produces a special model of its famed Lightfour, built with deep shaft, high-ratio reduction gear, and 360-degree steering that permits the boat to be maneuvered in any direction.



3 **The Japs** use outboards too, as is shown by this photo of a Jap outboard captured somewhere in New Guinea, and patched up by our boys to serve in ferrying supplies to the beach. Perhaps, by this time, it has been replaced by a sparkling Evinrude Speeditwin, a "popular number" in the far Pacific!

FREE

Send for copy of 1944 "Owners' Edition" of the Evinrude News. A pictorial magazine that covers outboards in war and peace — profusely illustrated with photos showing Evinrudes serving the Army and Navy, and pictures of happy peacetime uses to follow! Write for your copy!

EVINRUDE
OUTBOARD MOTORS

EVINRUDE MOTORS, 5063 N. 27th St., Milwaukee 9, Wis.

Every Dollar You Invest Helps Speed Victory — Buy More Bonds

SHADE TREES
Insects and worms—destroyed vegetation—reduced leaf area—stunted growth—these are some of the problems of the shade tree grower. Get our illustrated booklet that describes the use of "Black Leaf 40" in controlling certain insects on shade trees. Lists insects—gives dosage.
4137 FREE BOOKLET—Write
Tobacco By-Products & Chemical Corp., Incorporated, Louisville, Ky.
Black Leaf 40

GROW XMAS OR FOREST TREES

Write Today for Special Christmas Tree Bulletin and Complete Forest Tree Price List

	Per 1,000
2 yr. American Red Pine	$10.00
2 yr. Austrian Pine	15.00
2 yr. Colorado Blue Spruce	10.00
3 yr. Norway Spruce	15.00
3 yr. Balsam Fir	15.00

MUSSER FORESTS, Inc.
Indiana, Penna.

TREES FOR FOREST PLANTING
PINE•SPRUCE
Firs, Arborvitaes and Other Conifers. We raise all our trees in our own nurseries.
KEENE FORESTRY ASSOCIATES
KEENE, NEW HAMPSHIRE

TREES FOR SALE
FOR FOREST PLANTING
Norway Spruce, Red Pine, White Pine, Scotch Pine, White Spruce, Colorado Blue Spruce, etc. Prices are reasonable and the trees are GUARANTEED TO LIVE.
WESTERN MAINE FOREST NURSERY, DEPT. F.
Fryeburg, Maine

Adventure With Raccoon

(*From page* 350)

Rack came slyly and secretly in those hours when we were sleeping. The one night we saw him we had been on a nocturnal hike and returned to the cabin with the greatest silence of which we are capable. By aid of moonlight we could see Ruin at the feeding station, and there was another animal with her. In our excitement we risked flashing a light, and there sat a huge black racoon —undoubtedly our pet. For the moment we forgot our woods manners, sharply spoke his name, and made hurried moves toward him. He turned about quickly looking toward us for just a moment, and then disappeared as silently and completely as if the night itself had absorbed him. We like to think that he came other times, often we hoped, but we saw him only this once.

In that second season we heard many reports which seemed to indicate the extent of our raccoon's wanderings. A neighbor three miles away had a nocturnal visitor from the forest—one who was capable of opening the ice box. Since Ruin was expert at opening ours and mussing up the contents, we told our neighbor our suspicions. Several nights later this neighbor surprised a raccoon on his back porch, only to be surprised himself when the creature came up to him, and waited patiently while he got a cookie and offered it as a reward for the invasion.

Another winter had passed, its severity and problems no doubt drawing our raccoon friends deeper into wilderness ways and dimming their memory of us. In the spring following, we moved to our home on the island, and we wondered if these little creatures who had given us so much were still alive, if they would care to seek us and if they were able to find us. Night after night we had placed out savory food hoping a friendly breeze might carry abroad this message of hospitality.

However the message was borne, there in the moon-mellowed darkness was our much-loved Ruin. We held no doubt that it was she, though we must go through final proof. We must get to her, feed her, and perhaps touch her. In the brush and leaves back in the darkness we could hear her babies moving about, and she cast many an anxious glance in their direction. But she did not run, nor seem worried at our approach. Step at a time we moved toward her, enticing her with kindly, reassuring words, and holding out a much-favored cookie. Soon she caught the mood of the moment and cautiously came to meet us. It was a dramatic instant which tested our self-control to the utmost when she took our proffered friendship token, and then permitted us to stroke her head.

Our happiness that night was not wholly based upon sentiment. There were golden nuggets of intelligence revealed in that experience. Ruin had proved to us again the fine character of her kind, and demonstrated anew that in "wild creatures" there is the ability to form a friendship and hold to it.

Through last summer she and her family swam nightly to our island. Rack was not seen, though we like to believe the call we sometimes heard from the mainland was his imperative dictum for his mate's return.

Another winter will soon be upon them. But we have faith in their ability to come through, and feel certain they will be with us to enrich our experience when we return there in the spring.

Tree Trails

(*From page* 352)

is out of the ordinary. So it was with J. Whitney Floyd, extension forester for the Utah State Agricultural College, who heard our story through and then made some remark about the year of the Blue Snow. However, we produced the figures and gained his promise to accompany us early in March to where we had put our "X" to mark the spot.

As a fourth witness to the measurements, Professor Floyd took along Professor Marlin Gailbraith of the School of Forestry at the Utah State College, and with the four working metal tapes, an Abney level, calipers and an increment borer, an official computation was made. The foresters all the while exclaimed their surprise, and for once I was chastised for not telling the story tall enough to match the actual facts. Results of the measurement showed that the tree at four and a half feet above

TOOLS AND SUPPLIES
For Every Need of the
TREE EXPERT, LANDSCAPE ARCHITECT, NURSERYMAN, FORESTER
Special items as Honeycombing Drills, 5 or 6 feet Auger Bits for Bracing, Special Rule Tapes, Soil Testing Kits, Root Stimulating Hormone Powders, Electric Tools, Cords and Generators, Safety Equipment for any requirement and all staple items used daily.
Listed Completely and Descriptively in Our
BLUE BOOK
A free copy sent to you upon request
AMERICAN FLORIST SUPPLY CO.
Importers and Distributors
1335 W. RANDOLPH ST. CHICAGO 7, ILL.

Book Matches in Four Colors — With A Fire Prevention Warning!

FRONT

PREVENT FOREST FIRES
A match has a Head
but can't Think -
You Can -
BE SURE
YOUR MATCH IS OUT
Cover Design by
THE AMERICAN FORESTRY ASSOCIATION
919 17th St., N. W.
Washington 6, D. C.

INSIDE COVER

BACK

SPREAD the message of Forest Fire Prevention by distributing these colorful and useful Book Matches—and at the same time have the advantage of your own imprint on each match book. Give them to your customers and friends and arrange for their distribution among local drug, tobacco and sporting goods stores.

THESE useful matches *with your own imprint* available in case lots (2,500 books) at $12.50 a case—Free Delivery on 3 or more cases. Express collect on less than 3 cases. State Tax added in the following states: Iowa 2%, California 2½%, Michigan 3%, Ohio 3%, Missouri 2%.

IDEAL for all companies, associations and individuals who desire to promote a forceful and practical message in the interest of Forest Fire Prevention.

THE AMERICAN FORESTRY ASSOCIATION
919 17th Street, N. W., Washington 6, D. C.

Please enter our order for ..... cases of Forest Fire Prevention Book Matches. ☐ Check Enclosed. ☐ Bill us. ☐ Send samples by return mail.

IMPRINT SHOULD READ:

.....

.....

SHIP TO:

NAME ..... STREET ADDRESS .....

CITY ..... STATE .....

USE POSTER STAMPS IN YOUR WARTIME FIGHT AGAINST FOREST FIRES

Each Stamp in 4-Colors.
Actual Size

These stamps will help spread the message of forest fire prevention. Each stamp beautifully printed in 4-colors. Available in sheets of 100 at $1 a sheet. They are ideal for use on letterheads and envelopes, and each sheet used will mean that 100 individuals have been appealed to directly in the immediate fight to "stop forest fires before they start."

SEND YOUR ORDER TODAY.
STAMP OUT FOREST FIRES WITH POSTER STAMPS.

Order Blank

Please send me ..... sheets ($1 per sheet) of Forest Fire Prevention Poster Stamps (100 to a sheet). I enclose $.....

Name .....

Street Address .....

City..... State.....

Fill in, tear out and return to

THE AMERICAN FORESTRY ASSOCIATION
919 SEVENTEENTH ST., N. W.
WASHINGTON 6, D. C.

7-44

the ground is twenty-four feet five inches in circumference. The largest known *Pinus flexilis* was reported by The American Forestry Association in its report of last January as being twelve feet one inch in circumference. That tree is in the Toiyabe National Forest of Nevada. Our find measures forty-four feet in height and the two measurements of the crown spread from two different angles measured 593 inches and 440 inches.

Then we measured the diameters of each of the five branches at the point immediately above branching. They are (1) thirty-six inches; (2) twenty-five and a half inches; (3) thirty-five inches; (4) twenty-five inches and (5) thirty inches. Several times we attempted to determine the giant limber pine's age but Forester Floyd said the tree had a bad heart and the borings would not reveal the number of years it had weathered the Rocky Mountain storms. But we are safe in saying that for more than 2,000 years this phenomenon of nature has been dominating its position on the ridge atop the pass.

This *Pinus flexilis* in the Wasatch Range grows true to form in all respects save size. It has firmly entrenched itself on an exposed dry rocky ridge. It has little commercial use; however, if it were in a mining section it might be used for mine timbers, especially if it were an inaccessible area; or it might be cut for railroad ties if it appeared in a mixture with lodgepole pine.

The ordinary *Pinus flexilis* grows from forty feet to fifty feet high—the one in question is forty-four feet. Some go to eighty feet. It usually has a short trunk two to five feet in diameter, stout long-persistent branches ultimately forming a low wide round-topped head and stout branchlets. The wood is light, soft, close-grained, pale clear yellow and turns red with exposure.

The distribution of this species is on the eastern slope of the Rocky Mountains from Alberta, Canada, to western Texas, and westward on mountain ranges at elevations of 5,000 to 12,000 feet to Montana and southern California, reaching the western slopes of the Sierra Nevada at the head of King's River near the summit of San Gorgonio Mountain and in Snow Canyon, San Bernardino Range. They are usually scattered singly or in small groves; forming open forests on the eastern foothills of the Rocky Mountains of Montana and on ranges of central Nevada.

The text books say *Pinus flexilis* attains its largest size in northern New Mexico and Arizona; but text books will have to be rewritten. Another phenomenon of nature has upset the record—the biggest of the species, as far as written information goes, is on the Wasatch "saddle" in Utah.

Forests of France

(*From page* 330)

able to buy wood to heat their homes. The total amount of wood used for charcoal production, gasogene and domestic fuel in 1943 was thus approximately 14,000,000 standard cords. This, I am told, is about equal to an average year's consumption of pulpwood in America.

Consumption of railway crossties, sawtimber, hardwood and softwood, mine props and so on, has increased in such proportions that quality does not count for much any longer, inasmuch as demand has to be met as the materials become scarce. I know that mine props made of linden, beech and hornbeam, cut over a year ago and being sold today, are almost certain to be decayed and to lack the strength required for mining purposes. Many French miners have lost their lives due to breakage of props which should never have been used.

We are deeply concerned about the prospects of French forestry and forest industries in postwar years. The rehabilitation of France, as soon as she is liberated, will require huge quantities of wood. While in certain districts but slightly affected by the war local resources will possibly meet part of the requirements, we cannot depend upon finding locally the wood necessary to industry and to the restoration of economic life. Our colonies will certainly help us substantially, but that will not be enough.

France will be in desperate need of all sorts of forest products for postwar reconstruction, which neither she nor her colonies can fully supply. She will also need large quantities of tree seed and perhaps tree seedlings for reforesting thousands of idle acres. It is only natural that she should look to the United States for such supplies. She does so knowing that American forests themselves are not inexhaustible and that Americans are having many difficulties in meeting their own war requirements; also that they will need great quantities of wood products for postwar reconstruction.

In hoping that in addition to its own needs America will be willing to help France meet hers, we are suggesting only that it be done on a trade basis. We ask that American forest and forest

industry groups, public and private, work with ours to solve common problems of both countries. France and America have a long tradition of working together. Good postwar trade relations will help to make firmer the many ties which have long bound our respective countries.

Super-Wood Has Arrived

(*From page* 335)

the "heat and pressure" treatment is given in a mold with a mirror-like surface; and if anyone wants an embossed surface, say for a bar, counter, or showcase, the design is cut into the mold and pressed into the material.

The new treatment will greatly increase the usefulness of attractive woods which, in their natural state, lack hardness and strength. California redwood, with its luxurious texture and warm red color, white cottonwood, tidewater red cypress can now be used for floors and furniture.

Another trick in the bag is the easy, permanent dyeing of wood any color of the rainbow. I boiled a dyed sample for half an hour and the color did not run. The urea resin has a special affinity for dyes, as shown by the bright, attractive colors of urea plastic articles. The waterproof, stainproof wood in gay colors may be used for furniture, counters and restaurant tables. Manufacturers also point out that "built-in" color makes transmuted wood a natural for toys, games and costume buttons. Such subjects can be sawed or milled after the wood is treated, since the color is uniform throughout, and treated wood doesn't splinter.

The use of the new material in sporting goods looks particularly promising. For when articles must be highly resilient, the surface alone can be treated to improve wearing quality and the inside left in its natural state.

Heretofore, only a small percent of a tree has gone into furniture, and most mill waste has been burned. Now sawdust, edgings and shavings can be impregnated with methylolurea and pressed into durable panels. These can be permanently affixed, by a heating process which utilizes the adhesive properties of its resins, to a "transmuted" veneer of any fine cabinet grain which will not crack or warp. Dr. Berliner reports that experiments are also under way to make panels of impregnated farm products such as cotton, cane and hay; and that the cardboard cartons used in shipping supplies to our troops have been made waterproof and durable by the methylolurea process.

Although the ink is barely dry on duPont's methylolurea announcement, eight manufacturing firms are already using or preparing to utilize the revolutionary process. Use of the process is not restricted: the basic patents of the Forest Products Laboratory research are available for public use without fee; and duPont, as the sole American manufacturer of synthetic urea, wants only to increase its sales.

For decades, wood manufacturers have watched while their supplies dwindled, and their markets were eaten into by metals and plastics. Now superwood has arrived, and its future is a blank, signed check.

The wartime story of new wood derivatives and modified wood products is told in the report "Wood's Technological Coming-of-Age" published by the U. S. Forest Products Laboratory, Madison, Wisconsin. It describes the most recent group of new wood products developed at the laboratory as "impreg," "compreg," "hydroxylin," "papreg," and "uralloy."

Although little can be said at this time regarding the production of these new forms of improved wood, capable of competing with metals, plastics, ceramics and other products, "uralloy" is the laboratory's name for a group of products, including several similar to that described by the duPont Company. "Impreg" and "compreg" are products made up of sheets of veneer; "hydroxylin" is a low-cost, general purpose plastic made from sawdust; "papreg" is made of resin-impregnated layers of paper pressed together.—Editor.

"School-at-Home"
KINDERGARTEN THROUGH 9TH GRADE

This famous school will give your child sound, modern schooling wherever you may live. Courses widely used by Forestry Service families. Step-by-step guidance for parent. No teaching experience needed. Daily lessons, books and materials provided. Start any time. Catalog on request.

CALVERT SCHOOL
167 W. Tuscany Road, Baltimore 10, Md.

HANDBOOK *of* TREES Photodescriptive. Covers all the trees east of the Rockies and north of the Gulf States. 700 illustrations, 191 maps. Buckram, $6.

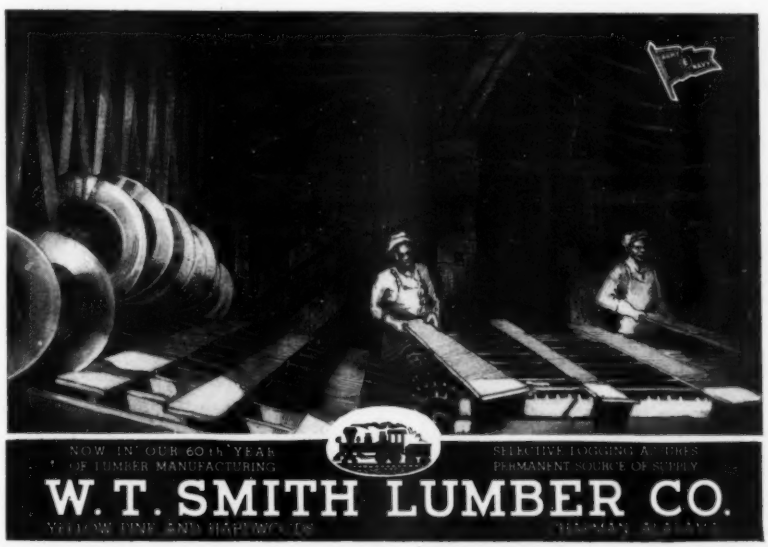
ROMEYN B. HOUGH CO.
LOWVILLE, N. Y.

FORESTER
FOREIGN ASSIGNMENT

Well established rubber plantation has opening for graduate foresters or agriculturists as divisional superintendents. Two-year contract, three months' vacation with full pay at expiration of contract, home and transportation furnished, good living quarters. Excellent opportunity for one interested in foreign employment.

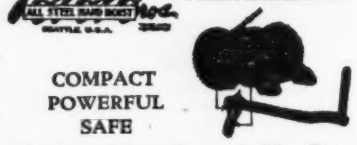
Address Box 744
The American Forestry Association
919 17th St., N. W., Washington 6, D. C.

BUY WAR BONDS!



"The Strongest Geared Power for its Weight in the World"

Two Speeds
Positive Internal Brakes



COMPACT
POWERFUL
SAFE

For Use Where Power is Not Practical, Available, or Sufficient

Two Ton "Lightweight"—Weight 60 lbs.
Five Ton "General Utility"—Wt. 110 lbs.
Fifteen Ton "Special"—Weight 680 lbs.

Positive internal brake—Two quickly shifted speeds—Adjustable length crank handle—anti-friction babbitt bearings—Spring operated safety dog. Only eight parts. No keys or set screws to strip. Drum instantly free spooled for running out cable.

Complete descriptive literature and list of dealers in principal U. S. and foreign cities gladly mailed. Warehouse stocks for dealers supply—Seattle, Chicago, Brooklyn, Houston.

BEEBE BROS.
2728 6th Ave. S. Seattle 4, Wash.

OFFICIAL
U. S. FOREST SERVICE
FIELD CLOTHING

- Specified Fabrics
- Expert Tailoring
- Perfect Detailing
- Guaranteed Fit

Write for latest prices and sample fabrics.

THE FECHHEIMER BROS. CO.
Uniforms for Over 50 Years
CINCINNATI 2 OHIO

Bartlett Tree Tools
are used the world over
Purchased on Priority
Send for Catalog
and plan for the future
BARTLETT MFG. CO., 3019 E. Grand Blvd.
Detroit 2, Michigan

FOR INVENTORS INVENTION RECORD HERE
Write today for valuable 72-page booklet, "How to Get Your Patent" and "Record of Invention" form—both free.
L. F. RANDOLPH, 586 Columbian Bldg., Washington, D. C.

Out of the Ashes of Nestucca

(*From page* 345)

vately owned lands under the State's "compulsory patrol law." The settlers, who on this forest frontier had, as they well needed, an abundant supply of rugged individualism, resented not being allowed to burn whenever and wherever they pleased. But reason and diplomacy slowly prevailed over pioneers' wanton ways and fires diminished. Meanwhile, many of the settlers who had vainly attempted to make a living in the narrowest valleys or on hillsides of the old burn abandoned their homesteads. And with their departure fires decreased.

With the diminution of the periodic fern and brush fires, the tops of Douglasfir and spruce began to rise above the weeds—that is, wherever there were seed trees nearby. Red alder came up like magic along the many watercourses and on the lower slopes. At first thought to be a weed, this species later proved to be a very desirable lumber tree.

So some of the Hebo country came back to forest growth by the process of natural regeneration, but only after a loss of sixty or seventy years' growing time—time in which the land might have grown a forest like that at Cascade Head.

But much of the Hebo country was too far gone to reforest naturally; it had been reburned too many times and was too remote from seed trees. So the U. S. Forest Service undertook to plant it up by hand—the first artificial reforestation project in the Pacific Northwest. There was much to be learned. Direct seeding was tried by various methods, broadcasting, seed spotting, and so on, but mice and birds got most of the seed. Planting of two-year-old trees followed, and in a big way from 1912 to 1918. Most of the planting was with Douglasfir, the great local standby, but a number of exotics, including eastern white pine, Norway spruce and redwood, were tried with some success.

In those days it was no easy task to carry on a planting project in these hills; the trees had to come from the Wind River Nursery by wagon, then by two railroad trains, a horse stage, and finally by mule back. Tent camps had to be built, a crew assembled and trained for the new task, and the men had to work in heavy brush and usually in rain, for this is the wettest of the webfoot country in the planting season. Even at a wage of twenty-five cents an hour and board, the work cost eight or nine dollars an acre—a heavy penalty the public had to pay for the needless fern fires of the past half century. Yet, considering the returns that would ultimately accrue, it was a good investment.

The bulk of the 6,000-acre plantation is now about thirty years old. Mt. Hebo is no longer a deforested burn. It is a young forest that has again made the hillsides dark green. The forest has shaded out the bracken fern and brush, and already is beginning to take on the mystery and twilight gloom of the big woods. Only a faint pattern of rows suggests that it is man-made. Ten years ago, CCC boys went through some of the plantations pruning the crop trees, a hundred per acre, that they might produce clear lumber more rapidly. On the better sites the trees are as big as lumbermen cut in some other regions, but it will be many years before the Forest Service begins to harvest this crop.

Growth plots, established to furnish a continuous story of the life cycle of these plantations, show that they are producing wood fiber at the current rate of 250 cubic feet (nearly three cords) an acre a year. In terms of board feet, the growth to date is not large, for many trees are not yet of sawlog size. But this stand is growing about as fast as did the Cascade Head forest at the same age; when it reaches the century mark it, too, will have a prodigious volume.

So here is the striking contrast on two parts of the old Nestucca burn. On the one hand, the Cascade Head area, that was gratuitously reseeded by nature to spruce and hemlock and fortuitously escaped reburning, now carries a superb dense forest of marketable trees cruising 100,000 board feet and more an acre. It has cost its owners, the people of the United States, almost nothing to bring it to this condition—a model of what a forest property ought to be. On the other hand, the Hebo area, that was in the backlash of the settlers' fires for half a century, was reduced to a barren waste, then had to be reclaimed by planting at a cost of eight or nine dollars an

SANDVIK BOW SAWS
MAKE HARD WORK EASY!

SANDVIK BOW SAWS lead in quality and performance, are always dependable and materially assist in reducing operating costs. FRAMES of lightweight Steel Tubing, SAWS made from best procurable saw Steel, thin back, fast and easy cutting.

Send for Descriptive Folder
Sandvik Saw & Tool Corporation
47 WARREN ST. NEW YORK (7), N. Y.

He won't dodge this-

Don't *you* dodge this!

The kid'll be right there when his C. O. finally gives the signal . . .

There'll be no time to think of better things to do with his life. THE KID'S IN IT FOR KEEPS—giving all he's got, *now!*

We've got to do the same. This is the time for us to throw in everything *we've* got.

This is the time to dig out that *extra* hundred bucks and spend it for Invasion Bonds.

Or make it $200. Or $1000. Or $1,000,000 if you can. There's no ceiling on this one!

The 5th War Loan is the biggest, the most vitally important financial effort of this whole War!

5TH WAR LOAN

Back the Attack! - BUY MORE THAN BEFORE

AMERICAN FORESTS MAGAZINE

This is an official U. S. Treasury advertisement—prepared under the auspices of Treasury Department and War Advertising Council

Your Invitation To Membership

IN THE

AMERICAN FORESTRY ASSOCIATION

TO provide a basis for informed postwar handling of one of the country's most important natural resources, The American Forestry Association on January 1 formally initiated a fact-finding survey to determine what effect the war is having upon the country's forests and forest lands and what will be their condition when the manifold problems of reconstruction are at hand. This important undertaking is known as the Forest Resource Appraisal.

Public-spirited citizens, industrialists and organizations alert to the need of forest conservation and development in postwar economy are making this survey possible by underwriting its estimated cost of $250,000.

Many other individuals and organizations are indirectly supporting this activity through membership in The American Forestry Association. We would welcome your participation in the important program of the Association, and for your convenience the various classes of membership are listed in the coupon below.

The American Forestry Association,
919 17th St., N. W., Washington 6, D. C.

I hereby apply for membership in The American Forestry Association and enclose $_____.

INDICATE CLASS DESIRED

- ☐ Subscribing Membership _____ $4
- ☐ Contributing Membership _____ 10
- ☐ Sustaining Membership _____ 25
- ☐ Life Membership _____ 100

AMERICAN FORESTS Magazine is Sent Monthly to Members.

Name _____

Street _____

City and State _____

7-44

acre and, moreover, had to be given very intensive protection to bring it safely through its highly inflammable stage. It will be another seventy years before it attains the volume and value that the Cascade Head area now has.

Between these two extremes within the original Nestucca burn is a big scope of country which is neither satisfactorily restocked nor so deforested that it needs planting. It is country that reseeded only indifferently; the trees are patchwise with brush openings between; there are many "wolf trees." It is country that has had some reburning, not intense or frequent enough to deforest it, but enough to spoil it for good forest production. This is the forester's hardest problem. It cannot be given back to Chief Harna and his Nestucca Indians. It presents almost as deplorable a situation as a deforested burn, for no one wants an understocked stand of bushy, limby trees interspersed with frequent blanks. Yet this type of stand will occupy the ground and cannot well be replaced by another until a market develops for such poorly stocked stands—or, God forbid, until another Nestucca or Tillamook fire sweeps through the country and makes it necessary to start all over again in the slow cycle of producing a brand new forest.

The moral of this little study of contrasts is very simple and quite clear: Nature is most bountiful and could here cheaply and efficiently heal the scars of a holocaust if given a chance, but if the greed and wantonness of man interferes with her processes by ill-advised land use and reckless use of fire, the penalty that must later be paid will be very high.

CREDIT FOR PHOTOGRAPHS

Credit for photographs appearing in this issue is acknowledged as follows:

Armer, Laura Adams—pages 331, 332 and 333.

Blackford, John L.—pages 338, 339, 340 and 341.

Campbell, Sam—pages 348 and 349.

Coast Guard, U. S.—Official Photos—cover insert and page 326.

du Pont Company, The—pages 334 and 335.

Forest Service, U.S.D.A.—pages 328, 342, 343, 344 and 345.

Missouri Conservation Commission—pages 346 and 347.

Ruellan, Andree—drawings on pages 329 and 330.

Whitman, John Pratt—drawing on page 336.

WHO'S WHO
Among the Authors in this Issue

GEORGES BOIS (*The Forests of France*) is discussed in the editorial note at the beginning of his article. The drawings are by Andrée Ruellan, a nationally known American artist of French descent,—in private life, Mrs. Jack Taylor.

LAURA ADAMS ARMER (*A Studio in the Redwoods*), artist and writer, was born in Sacramento. She has specialized in Chinese art and symbolism, and in the life of our own Navajo Indians, having painted and widely exhibited thirty canvases depicting Navajo myths.

HARLAND MANCHESTER (*Super-Wood Has Arrived*) specializes in writing for leading American magazines on new industrial techniques and inventions. A New Englander, graduate of Dartmouth and former newspaper man, he is now living in New York City.

JOHN PRATT WHITMAN (*Flag of Truce*), artist and producer, writes from his mountain home, "The Forest," in New Hampshire. A lover of the outdoors, particularly of New England's trees, his "pencil paintings"—beautiful and true—are typified by the one here reproduced of our native white birch.

JOHN L. BLACKFORD (*The American Wilderness*), of Montana, is well known for his inspiring writing and beautiful photography. His heartening pen and camera pictures reveal the far-flung frontiers of America in all their strength and beauty. For freedom, and this unsurpassed natural heritage, her sons once more go forth to fight and die.

THORNTON T. MUNGER (*Out of the Ashes of Nestucca*) went West fresh from Yale with one of the early invasions of young foresters and has been a part of the great forestry movement in the Pacific Northwest ever since. He was director of the Pacific Northwest Experiment Station for fourteen years and is the author of many technical papers.

SIGMUND SAMETH (*Trees Against Sand*) is a regular writer for national publications in his own fields of botany, anthropology and natural science, and in popular science as well.

SAM CAMPBELL (*Adventure With Raccoon*) — "The Philosopher of the Forest"—has run a hobby into a career. Constitutionally equipped to live in close harmony with the outdoors, his love of nature in all her forms but particularly the animals of the forest, has led to a lucrative career as an author, lecturer, photographer and broadcaster. His understanding of animals is unique, and his writing about them charming.

Pacific

HANDY BILLY

Portable Pumper

The principles of design and precision manufacture that have made the Pacific Handy Billy such an effective fire fighter for the Navy will, in due course, be available to protect forestry, industry and shipping against the ravages of fire.

Fire Fighting Equipment Division

PACIFIC MARINE SUPPLY COMPANY

SEATTLE, WASHINGTON

These SHOVELS

"Cheat the Scrap Pile!"

by the Extra Service they Give on Tough Jobs . . . *Here's Why*

One thing that sends a lot of shovels, spades and scoops to the "scrap pile" is splitting of the blade edges. That can't happen if on all orders you are careful to specify . . .

INGERSOLL

SHOVELS-SPADES-SCOOPS

All Ingersoll Blades are made from TEM-CROSS Tillage Steel. This is the famous keen-cutting, clean-scouring steel we use in making the Disc Blades for practically all manufacturers of Disc Harrows, Plows, Cultivators and Grain Drills. It is cross-rolled to give an interlocking, mesh-grain structure. That's why all Ingersoll Shovels have

BLADE EDGES GUARANTEED NOT TO SPLIT

It will pay you to specify "Ingersoll" on all orders for Shovels, Spades and Scoops.

INGERSOLL STEEL & DISC DIVISION
BORG-WARNER CORPORATION
NEW CASTLE, INDIANA
Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

All Blade Finishes now Black except Molders' Shovels and Grain Scoops which may be furnished with Polished Face and Brushed Back.

DISTRIBUTORS: Apply on Form WPB-547 with the Hardware and Small Tools Section of the War Production Board, Washington, D. C., for the necessary Priority Ratings. Definite shipping dates cannot be made for the duration, but we shall do the best we can under war-time restrictions.

INGERSOLL
SHOVELS • SPADES • SCOOPS